amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

VOL. 48, No. 12 DECEMBER 1980

FEATURED IN THIS ISSUE:

- ★ TEN TURN CHOPSTICK HELICAL — A HIGH GAIN ANTENNA FOR SATELLITE WORK
- ★ A REVIEW OF THE IC720 HF TRANSCEIVER
- ★ PROJECT ASERT — VHF PROPAGATION BETWEEN ALBANY AND ADELAIDE, 1979-80
- ★ RON WILKINSON ACHIEVEMENT AWARD
- ★ A MAN AND HIS HOBBY — VK3ACR

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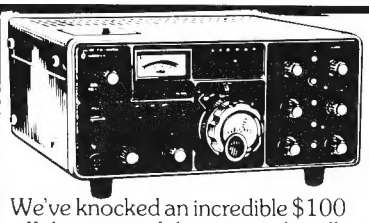

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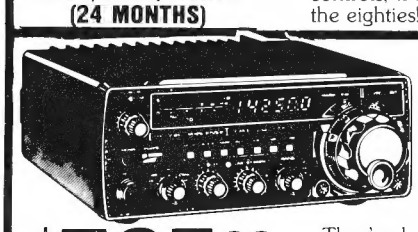

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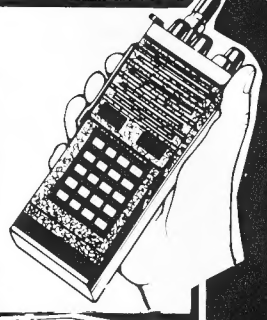

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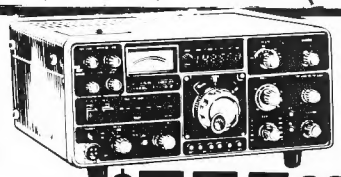

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Cover Photo

Pictured this month is the ever-smiling Charlie Robinson VK3ACR in his well-equipped shack. Turn to page 12 to learn more about this man and his hobby.

Wherever *you* want your signal to go–DAIWA has the ham equipment to get it there precisely! DAIWA's world-wide reputation for quality and advanced technical design is the result of research and of *knowing* exactly what users want.

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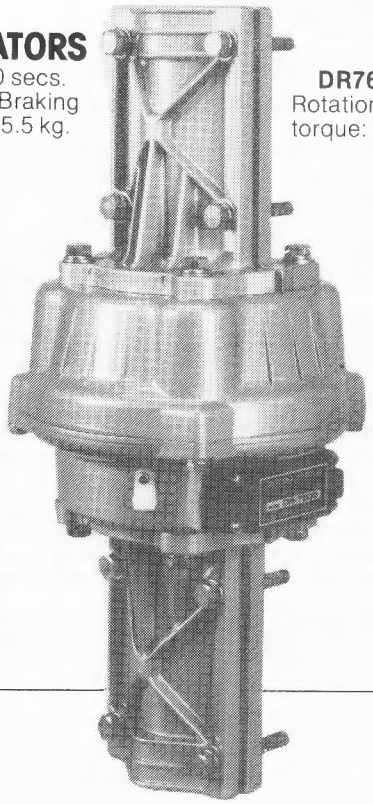

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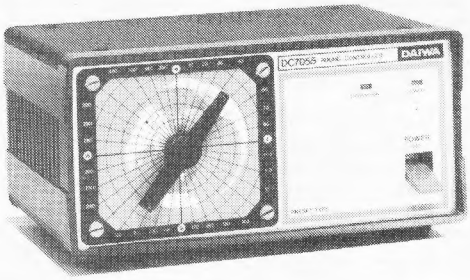

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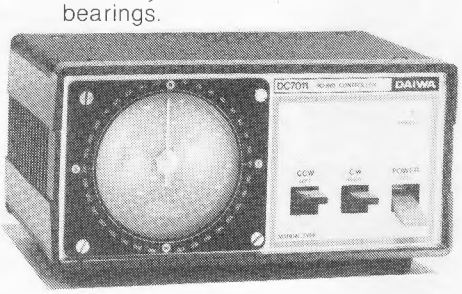

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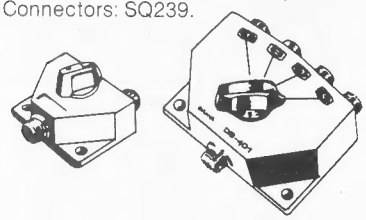
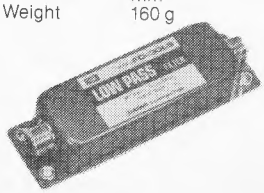


HF FILTERS

	FD-30LS
Frequency	1.8-30MHz
Cut-off frequency	32MHz
Power Rating	100w.CW
Insertion Loss	less than 0.5dB
Dimensions	140x27x42 mm
Weight	160 g



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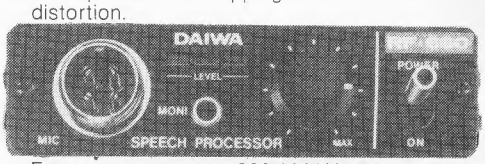

Frequency response: 300-3000Hz at 12dB down. Talk power: Better than 6dB. Clipping threshold: Less than 2mV at 1kHz. Bandwidth: 2200Hz at 6dB down. Distortion: Less than 3% at 1kHz, 20dB clipping. Output level: 80mV (RF550); 50mV (RF660). Power requirement: 230V (RF550); 13.5V. 50mA (RF660).

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SATELLITE CO-OPERATION

At the time our President, Peter Wolfenden, invited me to prepare the editorial for the December edition of "Amateur Radio", I was proposing to attend a conference in London of national organisations affiliated with AMSAT (Amateur Satellite Corporation). Unfortunately, this conference was cancelled at the last minute and I am therefore unable to comment on the somewhat strained relationships between AMSAT in the USA and other national satellite groups.

In many countries of the world, amateurs interested in satellite operations have formed their own working groups; in some cases these groups have only a minimal affiliation with their national amateur radio body.

In Australia, satellite enthusiasts have been more fortunate. Through the formation of Project Australis and the ultimate launch of OSCAR 5 — a satellite constructed in Australia — we have at all times been a part of the Wireless Institute. I say we are fortunate because I firmly believe that in all activities connected with our hobby we must have a focal point of communications with our national amateur body. Through the WIA, we have liaison with the international amateur organisation — the IARU — and with national and international regulatory bodies.

The close association between amateurs interested in satellite operations and our Institute came very much to the fore during the WARC 79 Conference when the WIA and in turn, our Postal and Telecommunications Department, fully supported the allocation of specific segments of the radio frequency spectrum to amateur satellite operation.

The role of the Australian amateur in satellite operations and the support given by the Wireless Institute has probably never been fully appreciated internationally. Nevertheless, we have the satisfaction that our interests have proceeded in a friendly and co-ordinated manner, and I hope this situation will continue in the years to come.

My message at the close of 1980 is that all amateurs should recognise the role played by the Wireless Institute on behalf of all facets of our hobby, for without this co-ordination we can easily lose many things that are so dear to us.

R. C. ARNOLD VK3ZBB,
Satellites and Special Projects Co-ordinator. ■

EDITOR'S DESK

Our magazine at times tends to be a little parochial in contents, we get very little news of happenings from the warmer climates.

I guess amateur radio activities do exist in Darwin, Perth, Brisbane and the outback, but on reflection of this year's publication, one might be forgiven if you thought that we deliberately held back information from these areas — how about it you distant amateurs, can we have some input of what is happening in your areas — PLEASE!!!

Our change-over to the new printing system went smoothly and without too many headaches — AR is now printed fully Web offset, except for the covers. As I indicated during the year, we can make use of spot colour more readily, and hopefully we can utilise this during the ensuing months to improve the presentation. Colour printing increases costs of production dramatically, so we have to be frugal in our use of it with our limited resources.

We welcome to our team Mr. Bill Baly, who has taken over the onerous task of AR production in the place of Mark Stephenson VK3PI. Mark served us well in the time he was with us, and he has now left for greener pastures — thanks for the good work Mark.

Subscription renewal time is with us again, and at this time of the year it certainly hits the hip pocket a little harder when we also have our Christmas and holiday season expenses to contend with.

Subscription rates have had to be raised once again to cover the ever increasing costs of AR production, brought about by CPI wage rises. This also affects our administrative staff, QSL postages, repeater maintenance, and licence fees, etc., etc. The list goes on and on.

The WIA and its services to members **cannot** be measured in the receipt of a magazine alone, it exists primarily to protect your interests as far as possible, and to instigate improvements and regulatory changes with representations to the nation's administrators.

We have succeeded in some areas, lost in others, but many submissions are in the pipe-line. We need a united approach to fulfil our aims and to maintain existing services.

Unfortunately, we have many "knockers", those amateurs who sit back and criticize and don't lift a finger to help.

If the Amateur Service is to withstand the pressures of outside interests on our bands, we must be unified. Amateurs together must work together.

If you are interested in the future of our hobby, and as a thinking Amateur Radio enthusiast, ask yourself:—

1. Can I afford NOT to be a member of the WIA?
2. What can I do to obtain new members?
3. How can I assist the voluntary members already working to protect my hobby interests?

Let's have some positive response to continue the important tasks ahead.

With these few thoughts for the festive season, and on behalf of the Publications Committee, I wish all readers a Merry Christmas and a Happy New Year, and look forward to our members' continued and greater support to AR and the WIA.

Bruce R. Bathols VK3UV, Editor. ■

JOIN A NEW MEMBER — NOW!

WIANEWS

23 cm BAND

Here is the text of letter RB4/4/4 of 8th October received from the Operations Branch of the Postal and Telecommunications Department in Melbourne —

"Reference is made to your representations concerning the use of F5 emission by Amateur operators within the band 1215-1300 MHz.

Noting that the Amateur service is accorded secondary status in this band the Department has carried out a number of negotiations with other users whose services might be subject to interference from the proposed Amateur operations. Resulting from these negotiations, the Department is prepared to allow the use of F5 by AOCP and AOLCP Amateurs in the band concerned on a trial basis for a period of six months.

Amateur operators using or intending to use the 12-15-1300 MHz band should note the existence of Radar facilities operated by the Department of Defence and the Department of Transport, and that is is most important to avoid interference to these services.

I trust that you will publicise this matter through the normal methods available to the Institute."

The possibility of a band plan (to comply with Institute policy) for 23 cm was discussed at the October meeting of the VHFAC. Further research is necessary before a suitable plan can be prepared prior to publication for general comment. It should be remembered that the lower portion of this band below 1240 MHz was not allocated to the amateur service at WARC 79.

Having obtained a limited concession for F5 on 23 cm, work will proceed to press for this mode on the higher bands, espcially the 5 cm band.

JOINT COMMITTEE

An amendment (188 of 1980) to the W/T Regulations came in for discussions in relation to three year licences, a combined LAOCP/NAOCP licence and collection of amateur station licence fees on commission. The first item remains uncleared because it involves accounting and Treasury procedures which the Department has to clarify. The second item definitely appears to be a probability but no details of its application can be obtained. The third item is considered doubtful in relation to its application to the amateur servce having regard to the wording of the amendments. Further details are awaited.

The Handbook came in for a share of the time as several amendments, some quite minor, are foreseen as necessary. The grant of third party concessions is a major item, particularly in relation to emergency traffic and WICEN training exercises. The Department sees a need to spell out the NAOCP theory syllabus in greater detail and discussions with them will be held in due course.

It was learnt that some aspects had been cleared with the Broadcasting Control authority regarding the Institute's long-standing application for the use of the 50 to 50.15 MHz of the IARU R3 6 metre amateur band. Pressure was exerted for the grant now of whatever is possible. A reply is anxiously awaited.

A special prefix, possibly from the VZA-VZZ or VHA-VNZ blocks for the use of amateurs during the 1988 Bicentenary celebrations was again discussed. Unfortunately VZ plus a numeral is already in use for land mobiles.

A letter from the Department is awaited restoring to "C" calls merely the change of State numeral when moving from one State to another.

Conditions applicable to beacons were clarified. The reduction of licence fees for pensioners promised some years ago had been vetoed but the Institute stated a fresh application would be submitted.

EXECUTIVE NEWS

Mr. L. G. Baly was appointed at a Selection Committee of the Executive to replace Mr. Mark Stephenson VK3PI on his resignation.

The new International diamond style of WIA membership badges are now available. This style of badge does not replace the existing badge. It was designed specifically for the use of Institute members travelling overseas where this type of logo is readily recognisable even at a distance. Many members will naturally wish to wear this badge in Australia too.

A short submission was made to the Cable and Subscription TV Services Enquiry on the lines that proposed frequencies should not be selected in or close to amateur service bands.

CHANNEL 0

Much time was devoted in October to matters relating to the establishment of Channel 0 Multicultural Services station late in the month. Subsequent observations that the service on UHF Channel 28 might have been given low priority did not escape notice in connection with the publicity given to this service and to its inception in Melbourne and Sydney.

GENERAL

Intentions in the USA to seek extensions to the phone segments of 20 and 40 metres for US amateurs were viewed in many quarters as detrimental to amateur stations outside the USA.

The Executive wishes to acknowledge with grateful thanks the following donation to the WARC 79 (and ongoing) fund —

Dalby and Dist. A.R.C. .... $10.00 ■

WIANEWS

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*

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as **early as possible.**

Your subscription rate is based on your WIA grade — check your AR address label.

QSP

CITIZEN'S BAND — AGAIN!

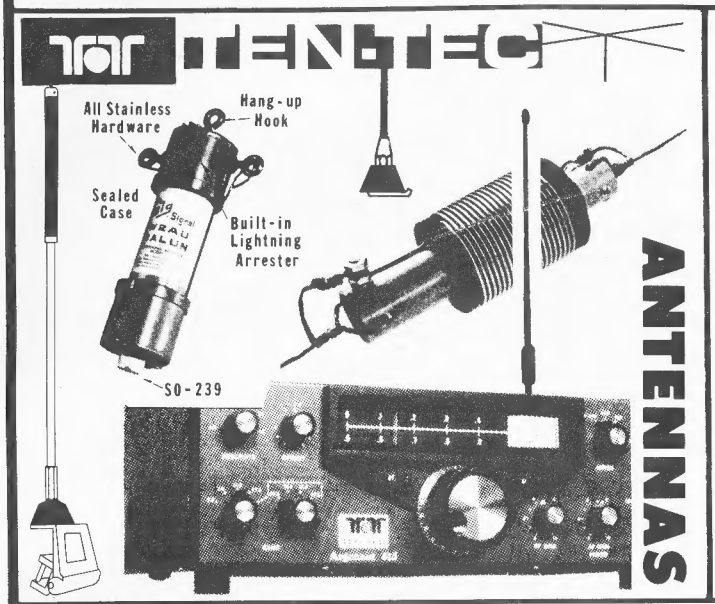
In recent weeks some 10,000 CB radios have been smuggled into the country, and as a result the amount of police activity to find this gear — and prosecute the operators — has considerably increased. This is particularly the case in London and Essex where there have been countless instances of bona fide amateurs being delayed or held while gear and status are checked. In an attempt to minimise this disruption in their neck of the woods, Harlow and Bishops Stortford amateurs arranged a meeting with the local police, the result of which was an agreement that local amateurs will carry a copy of the front sheet of their licence, their driving licence and/or RSGB card; club secretaries will give the police a list of local names, addresses and call signs; and there will be a copy of the Call Book in the police station.

This is what has happened in Harlow: we hope it will serve as an example of what can be done if things become difficult elsewhere.

We have no particular axe to grind for or against CB, but at the same time it must be pointed out that if it had not been for the arrant twaddle published by the so-called "Citizen's Band Association", smuggling of CB sets on this scale would never have happened. The result is that many an innocent lorry driver, say, is now about £200 lighter and awaiting the dealings of Justice — because someone told him it was "all right"; and any ham who has bought one can ponder the fact that he has broken the law and been ripped off. — Editorial, Short Wave Magazine, April 1980. Submitted by Steve Mahony VK5AIM. ■

UNITY IS STRENGTH

SCALAR CHRISTMAS SUGGESTIONS



SC22DX	5 Band Vertical.....	$129.00
SC33DX	3 Band Beam.....	$270.00
W2AU	Dipole Balun.....	$34.50
REYCO	HF Dipole Traps.....	$43.15
INTERFILTER	Low Pass.....	$74.75
GSA46	6dB 70cm Colinear...	$100.65
GSA24	3dB 2m Colinear.....	$150.95
Y309	9 ele. 2m Yagi.....	$284.65
Y409	9 ele. 70 cm Yagi...	$155.25
DX-15	VHF/AM Splitter.....	$55.20
DELTA 580	Ten Tec Transceiver	$1200.25
ARGONAUT 515	Ten Tec QRP.....	$606.49
OMNI-D	Ten Tec Transceiver	$1617.92
SCA26T	2m Helical 5/8.....	$12.90

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HA600T	6' HF Helicals.....	$39.70
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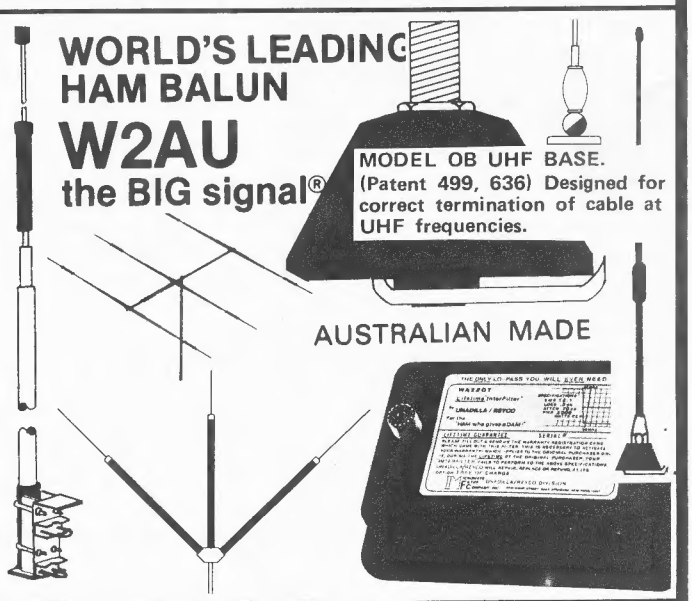
C54	Guttergrip Base.....	$17.25
MGB	Magnabase	$50.00
MB	VHF Mount.....	$3.65
OB	UHF Mount.....	$5.20
M27B	Heavy Duty Mount.....	$6.70
MS	S/S Mobile Spring.....	$9.10
MK	Knock-Down Knuckle.....	$9.60
HJA	Hemijusta	$9.50
INS-3	3" Porcelain Insul.....	$2.40



Frank Welsh	**VK3BPV**
Mike Kilpatrick	**VK2DJP**
Ron Smith	**VK2DCK**
Brian Robinson	**VK4NQG**

Prices include Sales Tax. Freight from factory is additional.
Note that these prices are not applicable in W. Aust.

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W.A. Unit 5/319 Pearson St., Osborne Park, 6017 tel: (09) 446 4657

The Ten-Turn "Chopstick" Helical: A High Gain Antenna for Satellite Work

Colin Richards 9M2CR
Submitted by Wal Webster VK2EW

Forward gain, forward gain, forward gain: that's the ceaseless search in satellite work. It's a task that jumps to the forefront with the approach of a new breed of satellite — Phase IIIA.

Phase IIIA will be put into a "pseudo-synchronous" orbit — which means that it will offer many of the advantages of commercial synchronous satellites. It will swing around the bottom of the globe at a low perigee of 1500 km and then hurtle out to an apogee of 36000 km — and (here's the bonus) — its movement relative to an earth station for the 4 hours spanning this apogee will be small. So that for 4 hours there will be an almost-stationary satellite up there, covering half the globe. For the first time, radio amateurs will be able to communicate on a world-wide basis using VHF + UHF, thus skipping many of the baneful problems of HF propagation. What's more, Doppler shift at the apogee will be very slight — so that the skilful searching and re-tuning so essential with low-orbit satellites will no longer be required.

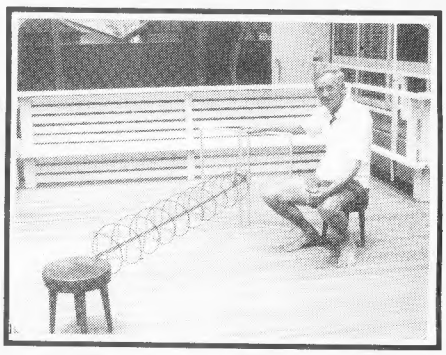


PHOTO 1: Colin 9M2CR with the completed project.

But there is a price to be paid for these advantages! Path length at apogee is virtually the same as that for commercial synchronous satellites. **They** counter this path loss by using giant 30-metre dishes, and low-noise amplifiers on receive, cooled in liquid helium. No amateur can compete with this! But latest estimates for Phase IIIA suggest that we can get by with an ERP of 500 watts — a tolerably modest figure. Of course, a 500 watt final is out of the question for most amateurs — so we have to get our gain elsewhere — notably from the antenna system.

Phase IIIA Uplink will be centred on 435.215 MHz, and will require clockwise circular polarisation. So — how to make a high-gain antenna with circular polarisation which can be hoisted into the air and pointed in the right direction without too much trouble? That is the question. Long John Yagis — crossed and phased — could offer one solution: but at 435 that phasing harness could present problems, while impedance matching is also a chore.

So . . . why not a helical? Here we have neatness, high gain, wide bandwidth and circular polarisation — all in one. Scanning the handbooks for design info on helicals showed that a ten-turn helix looked promising: a gain of 15 dB would persuade my 10-watts output to masquerade as 300 watts, and a beam-width of 36 degrees ought not to be too finicky to point. The boom length at 435 MHz would be about 6 feet, with a reflector 28 inches square — these seemed manageable dimensions. But what to use for the helix, how to form it, how to keep it in shape? All pertinent questions at this particular QTH — with the nearest parts or material stores some 70 miles away.

The boom was no problem. A 6 ft. 4 in. length of 1 by ½ in. meranti timber, good and straight, looked just about right — with the 1 in. edge vertical to avoid any bending (as it happened, the antenna itself turned out to be feather-light and easily supported by the 1 by ½). But what about the helix, and what about the spacers?

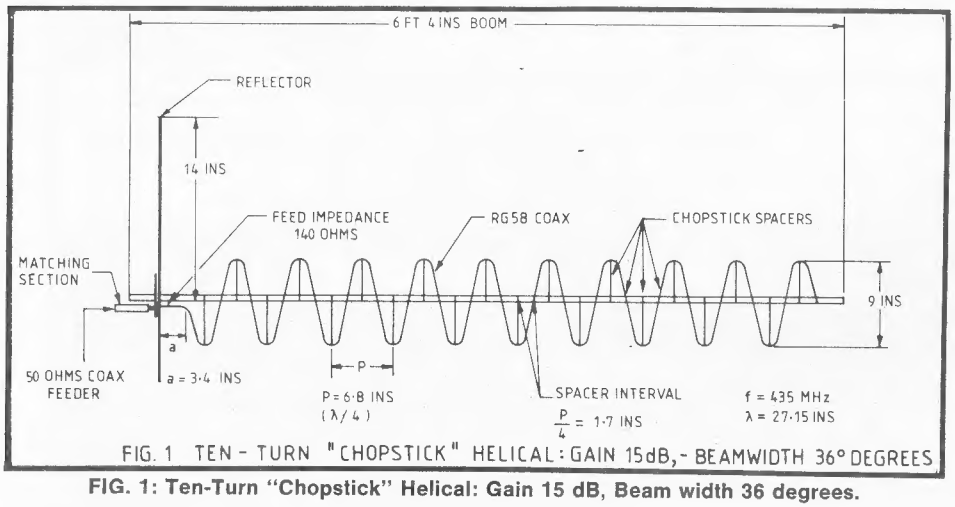


FIG. 1: Ten-Turn "Chopstick" Helical: Gain 15 dB, Beam width 36 degrees.

Copper tubing was unobtainable: in any case it would have been expensive, heavy and difficult to shape. Someone, somewhere had mentioned using coaxial cable: so why not RG58? The outer screen would simulate a tubular conductor: the inner conductor is not needed but could be soldered to the screen at each end. Good grade coax has a tinned, close-mesh screen with an excellent weatherproof sheath. What could be better? We promptly hunted out a 25 foot length.

Spacers were now the problem. Most handbooks showed 3 spacers per complete turn of the helix, each spacer being set at a 120-degree angle to the last. Since the boom was rectangular, it seemed more sensible to opt for 4 spacers per turn, and to put them at 90-degree settings. The original plan was to use ¼ in. diameter plastic rod or wood dowel for the spacers, but nothing remotely resembling such material was available locally. Pondering the problem over a tasty meal of Fuyong egg, crispy chicken and Cantonese bean curd — I suddenly saw the answer — there in my right hand: chopsticks! Why not?

Chopsticks are available in a wide variety of designs and material in Malaysia: we chose simple, wooden, everyday chopsticks (not bamboo) — undecorated — sold in bundles of 20 to 25 US cents a bundle. As with most chopsticks, the lower half is of circular, tapered cross-section — merging into a rectangular shape for the upper half. It couldn't be better! We marked the boom at 1.7 in. intervals and drilled holes 3/16 in. diameter — consecutively at right angles for its entire length. The boom was long enough to allow 3 to 4 in. to stick through the reflector, for clamping purposes. A 3.4 in. piece of the same boom material (1 by ½) was fixed to the boom at the reflector end,

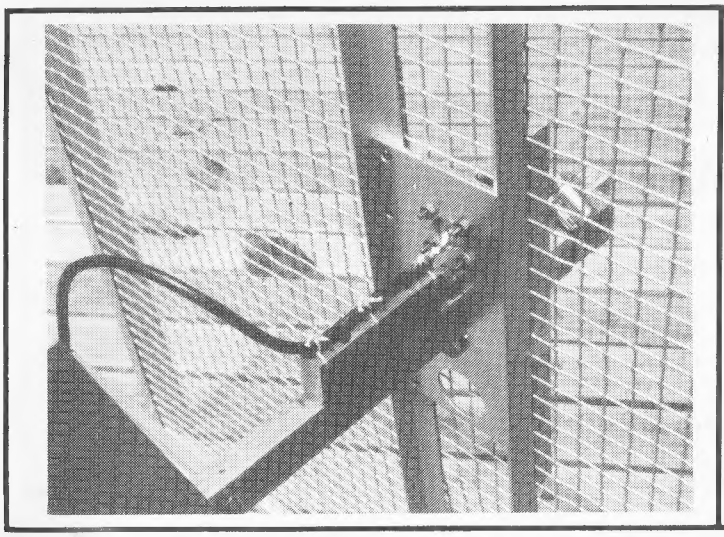


PHOTO 2: Termination of helix and mounting bracket and reflector (see also FIGURE 2).

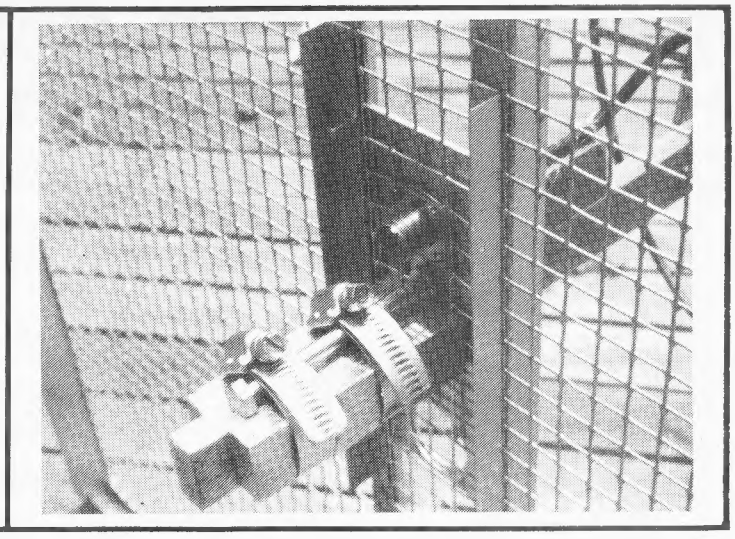


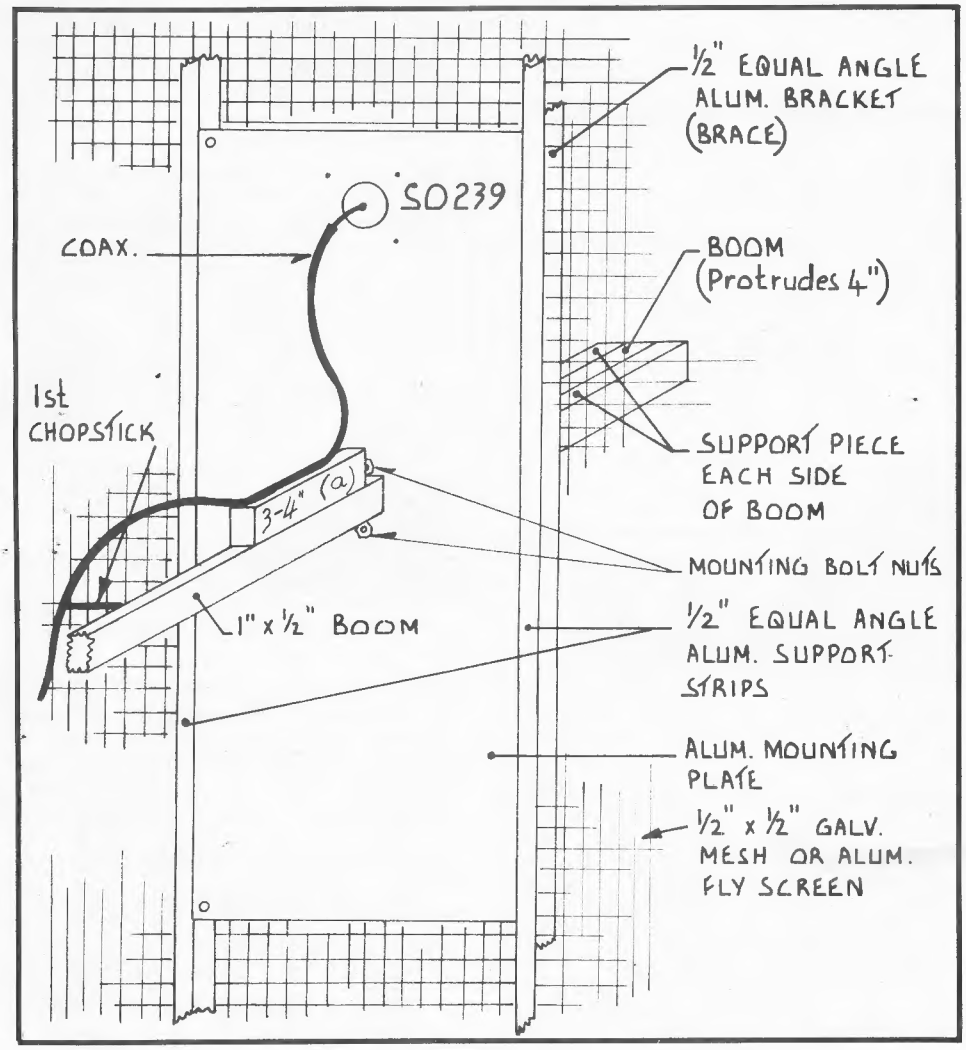
PHOTO 3: Securing the boom to the reflector (see also FIGURE 5).

and the 1.7 in. intervals were measured from this. All this can be seen clearly from the diagram.

A drop of glue was put into each drilled hole, and the chopsticks were pushed in one by one until they wedged tight. We did a double-check to make sure that we were putting them in with a clockwise spiral, as viewed from the reflector forward (that is, from the back of the beam). When giving the final push, each chopstick was twisted so that the square sides were roughly in line with the path that the RG58 helix would take. This made it easier to file a small U-shaped depression in the top, to allow the RG58 to sit in neatly. Chopsticks are generally about 10 inches long, and when pushed through the boom about 4 inches protruded on the other side. These bits were carefully sawn off. The helix diameter is 9 inches, so a mark was made on the last 4 spacers at each end of the boom, at a point 4½ inches from the centre-line of the boom. A fine hole was drilled at these marker points, and thread strung along from first to last spacer in each of the 4 rows. This enabled the other spacers to be marked, to show where they should be cut off. After trimming, the tops were filed into a U-shaped depression in line with the helix path. A small hole was then drilled, an eighth of an inch below the tip, so that a piece of waxed thread could be used to bind the RG58 helix in place.

One end of the 25 foot length of RG58 was bared for half an inch, the sheath and dielectric removed, and the screen and centre conductor twisted together and soldered. Starting with this end, the RG58 was bound to the short straight end section (3.4 inches) next to the reflector position. The soldered tip was placed so that it would mate with the centre terminal of an SO-239 socket which would be mounted on the back of the reflector. The RG58 helix was then wound carefully around the spacers, one at a time, binding in each spacer before moving to the next. In this way it was possible to ensure that an even, circular spiral was created — with no bulges or flat sections. As we neared the tenth turn, there was about 8 inches of RG58 surplus. This was cut off, the end trimmed, and the outer screen and inner

FIGURE 2 (below): Details of mounting bracket on reflector (front view).



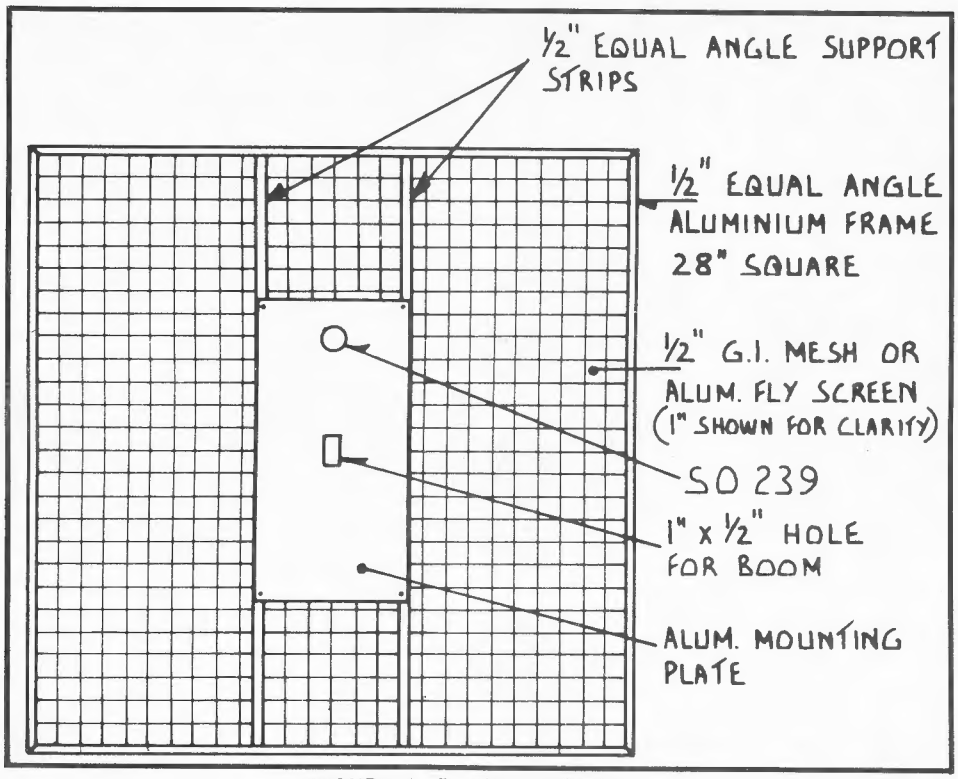


FIGURE 3: Details of reflector.

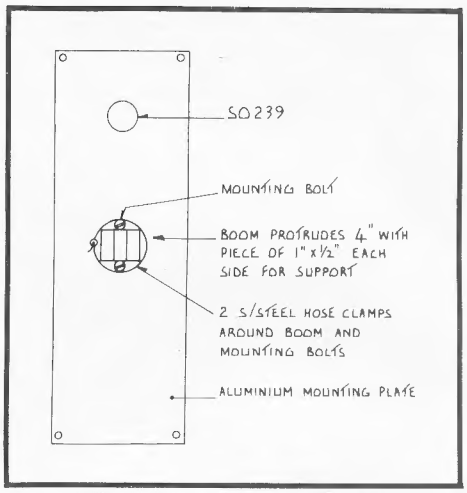


FIG. 4: Back view mounting plate.

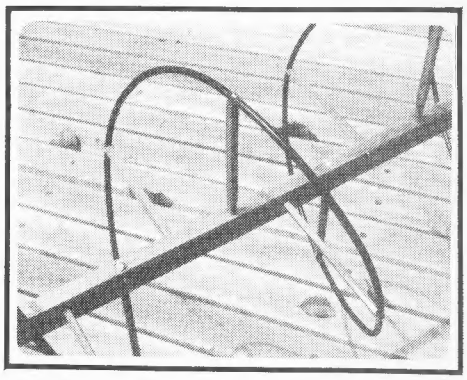


PHOTO 4: Helix attached to the "Chopsticks" spacers.

conductor soldered together as at the start ot the helix. The thread bindings were touched with glue, and the boom and chopsticks given a coat of clear varnish and set aside to dry.

The reflector came next. Half-inch squared mesh GI screen was used, and a 28-inch square cut out and edged with ½ by ½ aluminium angle. A small, sturdy aluminium plate was used as a centre mount for the reflector (it was, in fact, an old door-lock plate!). An aperture 1 by ½ inch was cut in the centre to allow the boom end to fit through and protrude 4 inches on the other side of the reflector. Above and below this aperture a hole was drilled for a 3-inch by ¼-inch coach bolt. The bolts were firmly screwed to the plate, with most of their length also protruding to the rear of the reflector. Two more lengths of aluminium angle (½ by ½) were screwed across the plate in a vertical direction, to make the reflector rigid. The SO-239 socket was fitted to the plate, facing rearwards, with its centre terminal lined up with the end of the helix at section "a". The antenna boom was then pushed through the reflector mounting plate, carefully squared up, and fixed firmly in place with two stainless steel hose clips around coach bolts and boom. The reflector weighed about 8 pounds, whereas the antenna-plus-boom was only 2 pounds. A plywood bracket was therefore fitted at the balance point, just a few inches from the reflector. Minor dents in the RG58 helix were pushed gently into shape, and the Ten-Turn "Chopstick" Helical was ready for hoisting aloft! Almost ready — that is.

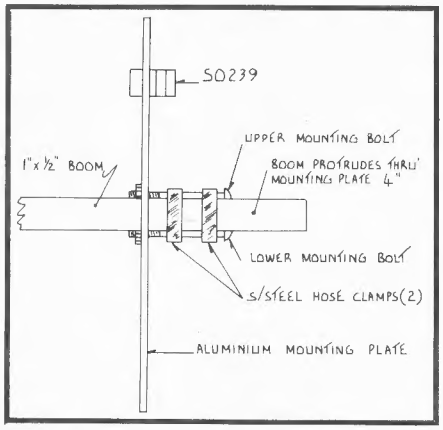


FIG. 5: Side view mounting plate.

There still remained the question of matching to a 50-ohm feeder. The feed impedance of a helical antenna of this design is near enough 140 ohms (this stays the same, by the way, regardless of the number of turns in the helix). A quarter-wave matching section should therefore have an impedance of about 84 ohms. The nearest coax is RG62, which has an impedance of 93 ohms. A quarter wavelength at 435 MHz is 6.8 inches and the velocity factor brings this down to 5.7 inches (there's a trap here: solid dielectric coax like RG8 or RG58 has a velocity factor of 0.66, but RG62 is partly air-spaced and the factor is 0.84). After many 'cuts and tries", the SWR was brought down to 1 : 1.1. So this time the antenna

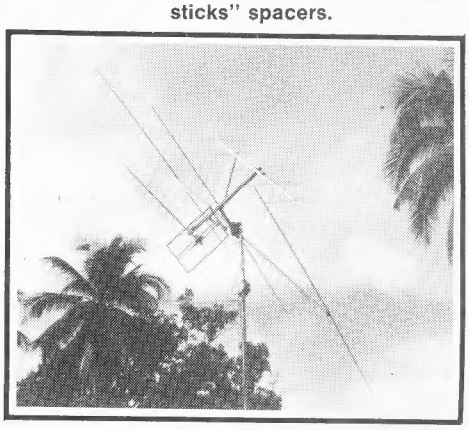


PHOTO 5: Final installation.

was really hoisted in the air and put to work. Results? When used as an Uplink antenna on Oscar 7, Mode B, signal reports have been encouraging: downlink on Mode J I can copy stations right down to the horizon. I think it works! ■

AMATEUR RADIO IS A RESPONSIBLE SERVICE

LET'S KEEP IT THAT WAY

Project ASERT:
VHF Propagation between Albany and Adelaide, 1979-80

C. J. Hurst VK5HI

With the forthcoming southern summer and the associated anomalous propagation (Ref. 1), that all VHF and UHF operators now accept as the norm, the results of the observations made of the Albany beacon VK6RTW on 144.5 MHz from the Adelaide area during the period 1st October, 1979, to 31st March, 1980, are now presented to further whet your enthusiasm.

Following the results of recordings made from January to March 1979 (Ref. 2) it became apparent that a more precise system to differentiate signal from noise was necessary so as to ensure that the results obtained were correct. To this end the writer developed an audio detection system to confirm the presence of signal. Fortunately VK6RTW exhibits excellent frequency stability thus allowing the use of a narrow band audio detector. An NE567 PLL tone decoder chip plus associated circuitry was configured to interface the single channel "Rustrak" recorder (Ref. 3) to the AVC and audio of the station receiver. In the event of a signal being detected a nominal 1900 Hertz Audio Tone is generated to:—

1. Latch up the tone decoder.
2. Initiate a timer for a 15 second period to —
   - 2.1 Disconnect AVC voltage from recorder.
   - 2.2 Connect a reference voltage to the recorder as an "event" indicator. (Simplistic approach in converting single channel to dual channel recorder.)
   - 2.3 Turn on a tape recoder.
3. At the conclusion of the 15 second period a further timing period of 2 minutes 45 secs. is commenced. During this period only the receiver AVC voltage is charted.
4. Reset decoder and timers.

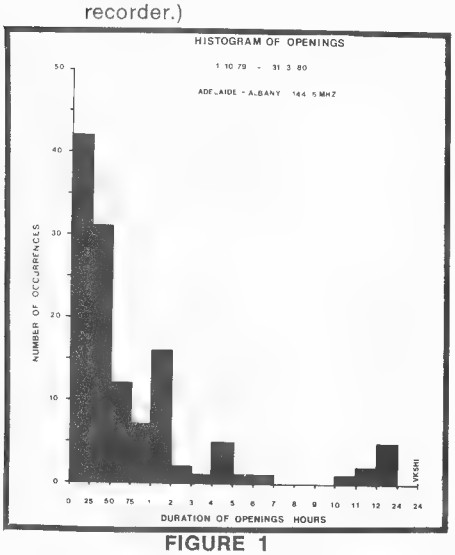


FIGURE 1

SIGNAL STRENGTH RELATIVE FREE SPACE	1979			1980			1979 / 80
	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	TOTAL
0 dB							
-5							
-10			1·0				1·0
-15			2·5				2·5
-20			9·5	1·5			11·0
-25	4·5		15·0	8·0		1·5	29·0
-30	11·0		21·0	18·5		2·5	53·0
-35	16·0	0·5	28·5	28·5	1·5	6·0	81·0
-40	23·5	0·5	41·5	46·0	4·0	13·0	128·5
THRESH.-55	23·5	3·25	65·75	74·0	13·75	41·5	221·75

DURATION OF SIGNAL (Hours) v SIGNAL STRENGTH

ALBANY - ADELAIDE 144·5 MHZ

TABLE 1

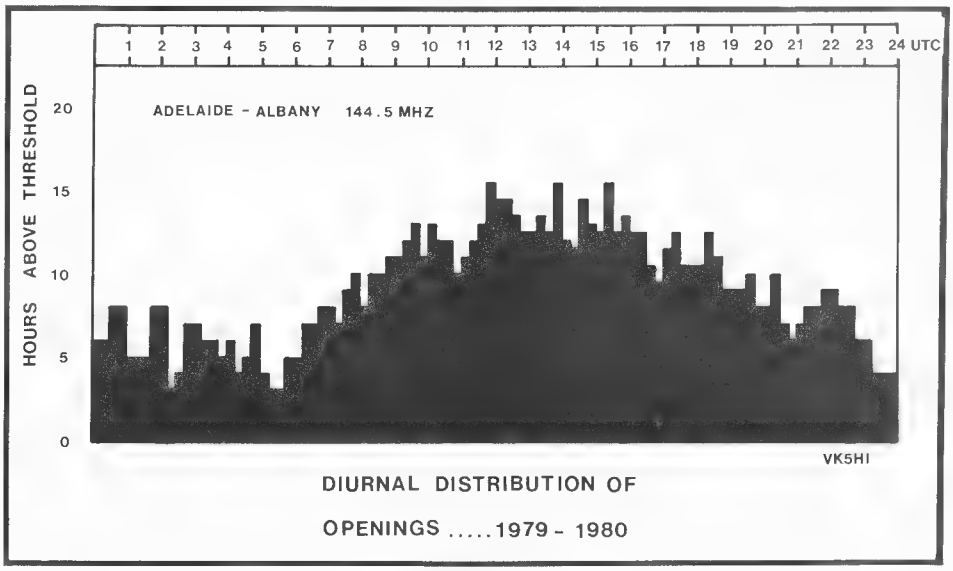


FIGURE 2

If the signal is still present the process is repeated. The resultant chart thus shows under signal conditions the receiver AVC voltage and a series of "event dots". The reference voltage for the "dots" is such to ensure 95 per cent full scale deflection. (Maximum signal equivalent to 0 db = 90 per cent FSD).

A bonus from the use of this system is that a signal which is 44 decibels down on the free space 0 dB signal is detectable. Due to the receiver system, a reliable dynamic range of only 40 dB in detectable

AVC variance is available again referenced to 0 dB free space. 0 dB free space signal level has been calculated to be 20 microvolts into 50 ohms for the total system (Ref. 4).

In this report no theoretical derivations on the results will be presented. The results have been graphed and tabulated as follows:—

1. Histogram of openings.
2. Diurnal distribution of openings.
3. Duration of signal vs. signal strength.

Additionally, to complete the summary for the period under review, 1/10/79 to 31/3/80, the following statistics have been derived:—

1. Signals were above threshold on 34 separate days, i.e. 18.6 per cent of days monitored.
2. Signals were above threshold a total of 221.75 hours, i.e. 5.5 per cent of hours monitored.

REFERENCES

(1) BAKER: Slow fading signal strength distributions for sea path tropospheric radio links in the Australian Bight region WRE — Technical Note — A250 (AP).

(2) Amateur Radio, April 1979, page 23.

(3) The Rustrak Recorder utilises an impact stylis contacting a pressure sensitive paper every two seconds. The resultant graph is a conglomerate of dots. Nonetheless an excellent recorder for this application.

(4) Calculated using the total free space transmission loss between the terminals of the transmitter and receiver. (Also included in Ref. (1) above.)

A Man and his Hobby — VK3ACR

Neil Town VK3ANK

Charlie Robinson VK3ACR as an amateur is very professional. (See cover photo.)

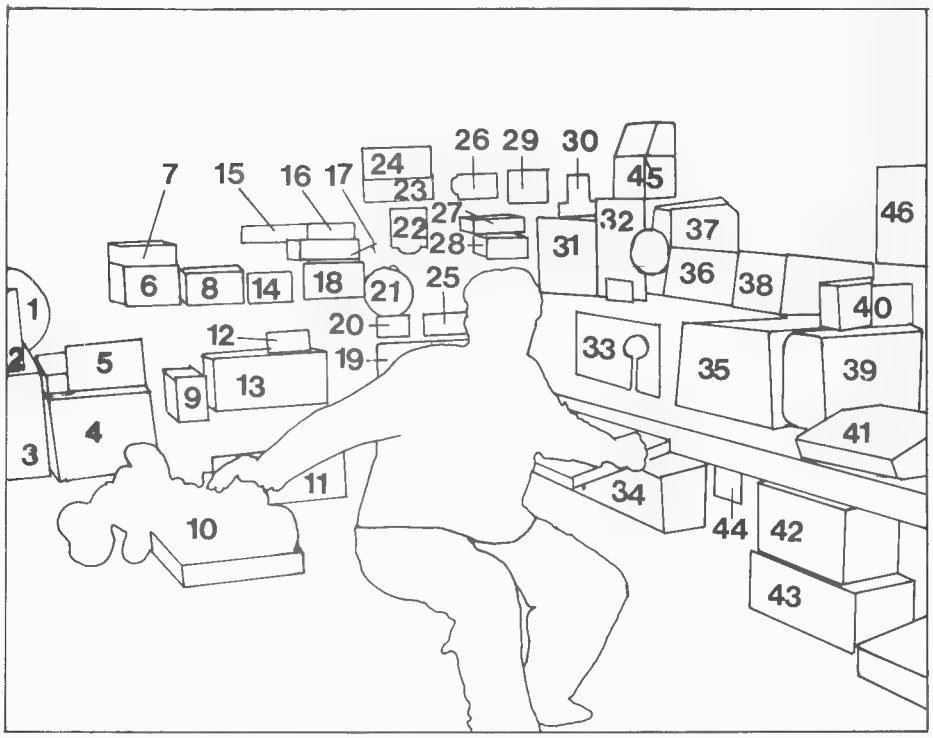
Stepping into VK3ACR's shack you won't find a gleaming polished-wood set-up. Instead you will see a host of transmitters and receivers from earlier days adapted and modified to still serve usefully in the latest trends of the modern-day amateur.

Charlie has spent all his adult life spare time experimenting, building and operating amateur radio equipment. His back yard shack in Boronia, Victoria, is a maze of dials, knobs, meters, and bits of wire, lovingly stored for the time they may once again be put into use.

There's his old morse key, which he first started pounding way back in 1936 as VK7KR in Launceston. There's his latest piece of home-made gear, ultra low frequency, which will react to a bunch of keys being rattled across the street more than 100 metres away. And there's his old Mark II, Type III, which he has adapted to rag chew on the 160 band.

In true bower-bird style Charlie hates to throw anything out. As he updates his equipment, the older gear, if it can't be coupled to an UHF transverter or converter, is gently put aside where it can be seen and never forgotten.

Now retired, he may be found almost any time of the day busy with his bits and pieces, experimenting, testing, or shooting a beam through a satellite as he contacts his AMSAT friends.



Could you pick them? Some of the 46 items or so that keeps VK3ACR on the air. 1. 40 kHz dish. 2. Audio CRO. 3. Solotron 3 in. CRO. 4. Signal generator. 5. Transmatch. 6. Power supply IC22. 7. IC22. 8. SWR meter. 9. Monitor CRO for RTTY. 10. Creed 78 teleprinter. 11. RTTY demodulator. 12. VFL converter, 5 kHz to 500 kHz. 13. FT 101ZD. 14. Auto CQ and signing device. 15. 432 MHz to 1296 MHz wave meter. 16. ATV converter. 17. Micro module, 432 MHz to 434MHz, transverter. 18. Forest phone. 19. KW 2000E transceiver. 20. Two-tone oscillator. 21. World time clock. 22. Coax switch. 23 and 24. Aerial tuner for 1.8 megs. 25. SWR meter for KW2000E. 26. Digital clock. 27. Micro module, 432-436 MHz, transverter for satellite. 28. 432 SWR meter. 29. Barometer and thermometer. 30. Home-brew 432 linear amplifier. 31. Type 3, Mark 2, for 1.8 MHz AM. 32. Two metre transverter sideband. 33. BC348. 34. Junk box. 35. KW Viceroy transmitter. 36. FT200 transceiver. 37. P45 television receiver. 38. Power supply for FT200. 39. Power supply KW Viceroy. 40. SWR meter (spare). 41. Keyboard for computer. 42. Two metre linear amplifier for SCR 522. 43. SCR 522 vintage two metre transmitter. 44. Switch control for rotator on TH3. 45. 100 watt linear 144 amplifier. 46. Rotator indicator for TH3. ■

QSP

EXAMS

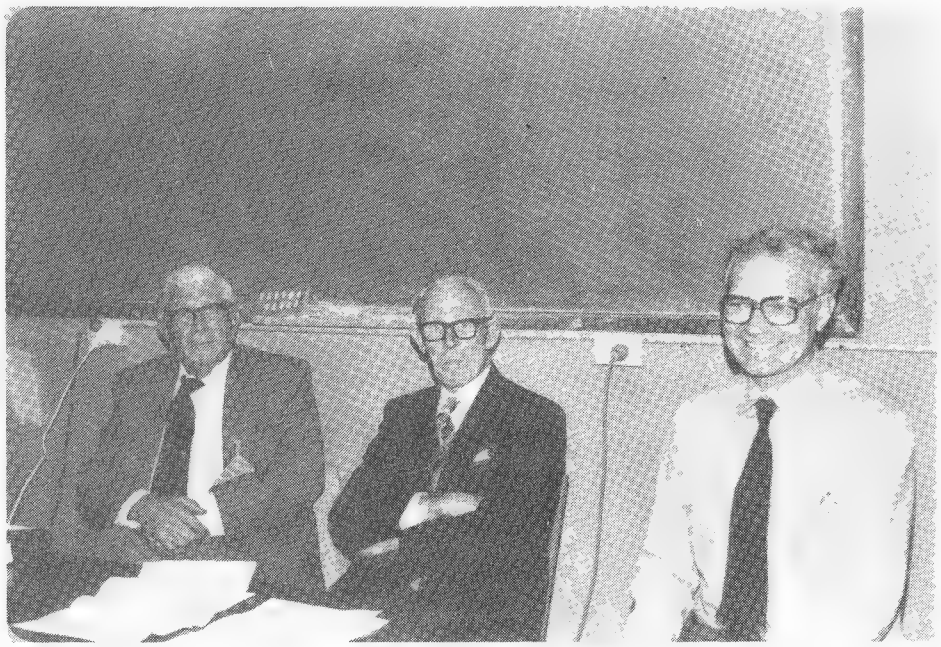
A comment in Presstop of Ham Radio September 1980 indicates that the USA's FCC exam pass rate has been climbing steadily in recent months after having remained fairly constant for years, according to an anlysis. The FCC's rules apparently have no provisions for protecting the security of its examinations. A publisher selling exact question and answer sheets in study material is given as the only apparent reason for the shift which is the cause of concern in both FCC and amateur circles. "There is considerable feeling," says the comment, "that the increased pass rates are due mainly to memorization rather than understanding, which would result in unqualified applicants receiving amateur licences and the licence itself being cheapened as a result" Another item shows that US amateurs totalled 385,625 at the end of June, which reflected twice as much growth in the first six months of 1980 as it did in the whole of 1979. ■

A Bit of Victorian History

J. A. Adcock VK3ACA

At the December 1979 general meeting of the Victorian Division, we held an Historical Night to which two of our "founding fathers" were invited, namely W. K. Witt and T. F. O'Shannessy. Both these gentlemen were present at the inaugural meeting of the foundation society of this Division. Following the December meeting, Mr. Witt, who was 87, passed away on 26-2-80.

The following information was prepared as background and was handed out at the meeting.



Left to right: Guests of Honour, Mr. Witt, Mr. O'Shannessy and John Adcock VK3ACA, who introduced the speakers.

Extracts from the original minute book.

THE INAUGURAL MEETING OF THE AMATEUR WIRELESS SOCIETY OF VICTORIA

Melbourne, 30th November, 1911.

A Public meeting was held at the Esparanto Hall, 152 Elizabeth Street, Melbourne, where it was decided by the gentlemen present to form a Society, so as to draw together all gentlemen who were interested in Wireless Telegraphy and by the exchange of views, etc., to encourage and assist experiments in this extremely interesting branch of science.

RESOLUTIONS

1. It was resolved that the name of the Society should be *"The Amateur Wireless Society of Victoria"*.
2. President, Mr. M. A. H. Ryan; Treasurer, Mr. J. Wilson; Secretary, Mr. F. E. Moorr.

Further resolutions included a committee of six and a complete constitution.

GENERAL MEETING
The first general meeting was held on 13th December, 1911.

From January 1912 meetings were held in the Oxford Chambers, 437 Bourke Street.

ANNUAL GENERAL MEETING
20th November, 1912.

President, Mr. Ryan; Vice-President, Mr. Cole; Secretary, Mr. Witt; Treasurer, Mr. McHenry; Committee, Messrs. O'Shannessy, Culliver, Devenport, Strickland, McGregor, Lindow.

EXTRAORDINARY COUNCIL MEETING
10th April, 1913.

It was resolved that in the opinion of the Council it is expedient and in the best interests of the Society to change the name, and that it be recommended to the General Meeting to be held on 1st May, 1913, that the name be altered to *"Wireless Institute of Victoria"*.

GENERAL MEETING
Thursday, 1st May, 1913.

A lecture on his experiences in experimental wireless was delivered by Mr. H. W. Jenvey.

Special business: After some discussion it was moved J. S. Arcklan, seconded N. Culliver that in future this Society be known as "Wireless Institute of Victoria". Carried unanimously.

Mr. Perry, Hon. Secretary of the "Wireless Institute of New South Wales", was present at the meeting at which he demonstrated a "wave meter"!

ANNUAL GENERAL MEETING
30th October, 1913.

Elected Office-bearers: President, Mr. G. F. V. Cole; Vice-Presidents, Mr. T. F. O'Shannessy, Mr. W. K. Witt; Hon. Treasurer, Mr. A. McGregor; Librarian, Mr. D. Harrison; Auditors, Mr. J. Welch and Mr. L. Birchall; Council, Messrs. C. V. Gallagher, D. Harrison, H. Lindow, J. Strickland.

Since the Secretary resigned and no other was forthcoming, the appointment was postponed.

The meeting was informed that the Book of Calls (Call Book) would go to print immediately upon receipt of an amended list from the PMG.

GENERAL MEETING
November, 1913.

Mr. McHenry appointed Secretary.

GENERAL MEETING
1st December, 1913.

The Secretary informed the meeting that full permission for the erection of an aerial and installing electricity in the Club Room had been obtained from the people in charge of the Oxford Chambers.

GENERAL MEETING
11th August, 1914.

In connection with recent developments re disconnecting, dismantling and finally storing all gear in local PQ, a long discussion ensued and questions were asked and answered. It was decided to hold together as an Institute to ensure the return of apparatus and right to experiment further after war and trouble over.

ANNUAL GENERAL MEETING 1914

There does not seem to have been one, but during 1914-1915 there were several changes of Secretary.

GENERAL MEETING
February, 1915.

The following members were in active service: Messrs. W. K. Witt, A. McGregor, L. Robertson, Kenpling, Hughes, Keating, Israel, Jamieson.

THE LAST RECORDED MEETING
9th March, 1915.

APRIL 1st 1919
(From "Land, Sea and Air", May 1919.)

An inaugural meeting of the Wireless Institute of Victoria was held at the Marconi School of Wireless, 422 Little Collins Street.

The meeting had been convened by Mr. W. K. Witt at the request of the Honorary Secretary of the Wireless Institute of New South Wales (Mr. Malcolm Perry) and many others.

Provisional Committee: Messrs. Conry, Nightingall, Tatham and W. Witt.

INTRODUCTION
By J. A. Adcock VK3ACA, who acted as moderator of the meeting.

"It is not often that you have the opportunity to create an historic occasion.

It should be pointed out that the history to be discussed here refers only to the origin of the Wireless Institute of Australia, Victorian Division, as a single society. The federal organisation of the Wireless Institute of Australia did not come about until after 1920, although it was considered much earlier.

A great deal of historical record would never have been known if it were not for the rediscovery of the original minute book. Its discovery and some details of its contents were published in Amateur Radio, August 1970, under the title 'The History of Amateur Radio and the Wireless Institute of Australia'. Reference was made in the article to the inaugural meeting being held on 30th November, 1911.

One of the most puzzling features of the minute records is that this Society was inaugurated on 30th November, 1911, and not in 1910 as is commonly believed. The idea that the Institute commenced in 1910 is so strong that it probably has some foundation. We know for certain that the Wireless Institute of New South Wales was operating quite early and it is possible that it did commence in 1910. Maybe one day someone could search the NSW newspapers for a clue.

One interesting observation on the minutes is why the name of the Society was changed from the 'Amateur Wireless Society of Victoria' to the 'Wireless Institute of Victoria'. There is no indication in the minutes as to why it was changed. I believe it was changed to bring it into line with the 'Wireless Institute of New South Wales'. It will be noted that the Secretary of the 'Wireless Institute of New South Wales' was present at the meeting the name was changed.

Mr. Witt was Secretary of the Institute in 1912 to 1913. He is a personal friend of the Seddons (VK3ACS) and was a guest at a recent Annual Dinner of the Institute. He was a radio operator in the Navy during the first World War. Following the war he was responsible for re-convening the 'Wireless Institute of Victoria" but was not actually engaged in amateur radio after that time. More recently he has been in business as a timber importer in Williamstown.

Mr. O'Shannessy was re-discovered about the time of the formation of the Old Timers' Club. Mr. O'Shannessy was prominent on committees before the first World War. He is founder of the company 'Commonwealth Power Equipment Pty. Ltd.', who manufacture commutators and is still active in the business.

It is remarkable for us to have these people present at this meeting, but it must be more remarkable for them to come back after 68 years and find the organisation they founded still going."

MR. WITT'S TALK
"First I would like to straighten out a point made in the introduction concerning the word 'Amateur' in 'Amateur Wireless Society of Victoria". We felt, at that time, that the name was not sufficiently dignified and therefore the council decided, in April 1913, without any prompting from New South Wales to change the name to 'The Wireless Institute of Victoria'.

I feel somewhat apologetic talking to all you scientific experts about radio telegraphy, because the days when we were actively engaged in it were very much like the days of the discovery of the wheel by prehistoric man. People in those days like myself were all in a state of ignorance. There were few who knew much about it and there was not much literature. At the same time we were not really pioneers, let's face the fact that wireless telegraphy was a practical thing in those days. We made our equipment and were amazed to find that we received signals. Transmitters used Ford coils as spark transmitters and coherers as receivers.

The original idea to get people together interested in radio telegraphy I believe came from a man called P. H. Macilroy, who had a shop in Swanston Street (later known as Homecrafts) in 1910. *I know he did call a meeting some time before November 1911.* (Author's comment: Could there have been an earlier Society; does anyone have any record of this?)

MR. O'ŞHANNESSY'S TALK
"When I was invited to give a lecture to this meeting, I threw my memory back to those days of awe-inspiring experiments when there was little known about the new wonder wireless telegraphy. There were no books relating even remotely to the subject and only an odd article in 'Scientific America' which more often than not would provide 'advice' which could send you 'up a gum tree'.

Tesla and the rest of them had their ideas but just as my dad as a lad could never visualize man in flight, so I could not accept the thought as any more than a thought that my generation or the next would hear voice, music or any sound other than the dot dash of morse signals coming over the air. Our present TV was entirely out of the question.

The 'singing arc' did offer some possibility of sound transmission but nobody seemed to give it serious thought.

The reception of DOT DASH without wires was an exciting adventure. Transmission and reception became the supreme aim of many a lad in and around the early years of the nineteen hundreds.

Lodge and Muirhead were experimenting in England and with two miles between stations they were endeavouring to increase this distance by improved technique rather than by increased power input. Marconi paid them a visit and decided to follow up with a much more powerful plant.

I saw no evidence of creativity in Marconi. All he did was to use Lodge Muirhead ideas on a grand scale and exchange messages with a ship 200 miles out at sea. 'A world-rocking discovery by Marconi?'

In my neck of the Woods I had a pal named Culliver in East Melbourne and he could communicate with me in Richmond, a distance of less than one mile. We wore out many pairs of shoes running between stations when reception was on the blink and we did not know why. Gradually our know-how improved and amateur stations were springing up all around Melbourne. Nightingdale in Garden Vale had a high power plant but got into trouble when his wonderful aerial mast fell on a neighbour's roof.

Culliver and I built a box kite, 10 ft. by 8 ft. by 4 ft., with window-sash cord carrying a wire to 'high' altitudes. A real Faraday effort.

The Richmond paddock was our flying ground on a Sunday morning and cyclists would pedal from St. Kilda and elsewhere to see what they thought was a first aeroplane.

The Curator of Parks took a dim view when we lopped the limbs off some of his trees. In even a moderate wind we could not hold that kite unless we lashed the cord on to the post and rail fence.

When Culliver flew the kite with advertisements over the Richmond racecourse, he pulled the chimney pots off the local bank, and this did not make anybody very happy.

Then a time of great excitement. We made contact with a ship at sea. The 'Ballarat', which I thing was later sunk by enemy action in World War 1.

The wireless operator made an appointment to visit Culliver's plant when he reached port and, wonder of wonders, he was so impressed that he presented us with a Marconi Coherer.

When we later tried out the Coherer we found that it did not match up with our own. Marconi, as you no doubt know, used iron particles in a vacuum tube and a small vibrating hammer to separate the particles after each signal.

With no vacuum available I was faced with using particles in air, so I chose aluminium filings which would oxidize very rapidly. They did the job first class and did not require a hammer.

We also had a Muirhead detector which had a small steel wheel with sharp edge turning in a well of mercury. Quite a good idea and like the Coherer it could carry enough current to activate a relay which in turn operated a tape machine.

Add crystal and cat's whisker and earphones for long distance reception and you have a picture of wireless of those times.

So many 'untuned' stations were hitting the air that we saw need for exercise of some control. The Amateur Wireless Society was formed and in due course we sent a deputation to the then Director of Telegraphs, Mr. Balsilli. The result was registration of all wireless experimenters and an issue of call signs.

At our meetings of the Amateur Wireless Society we would exchange know-how and let our imagination run riot. Many original theories were given the light of day and some have yet to receive scientific appreciation. I have always supported the idea of Study Circles as an important part of technical societies. These Study Circles can delve into the unknown, and who of us can say that he has not some ideas and theories which could be as useful as Newton's apple. Why are we so lazy that we leave bright ideas to the other chap.

X-ray came in for a share of attention in those early days and discussions were so animated that at close of meetings we would continue debate on the kerbside till a late hour. With, of course, an eye out for the last tram home.

When we learned that experimenters in other States were getting together I was appointed to visit Sydney. With little money in those days, I lodged at the People's Palace, so before attending the meeting in Sydney I called at the Wentworth to get the lay of the land. After the meeting I was escorted to MY hotel, the Wentworth of course, and later I sneaked out and made my way to the People's Palace. One must never let the team down.

I mentioned my pal Culliver. He was a dedicated experimenter who had the urge to spend on materials rather than on food for his family. A drink addict had nothing on Norman Culliver.

Perhaps I had much the same measure of enthusiasm but the fates ordained that I obtain a job with the India Rubber Gutta Percha and Telegraph Works, 'Silvertown'. This job took me away from home and ended my experiments. It was many years before I returned home.

A section of the audience at the meeting.

'Silvertown' was an English firm engaged on the erection, installation and operation of electric supply stations in various country towns in Victoria. Dandenong, Daylesford, Euroa, Horsham, Korumburra, Nathalia, Nagambie, Rushworth, Shepparton. All were towns with go-ahead Councils.

I could relate many an anecdote but space is limited. You will gather an idea of our attitude of mind in those days if I give you an account of a grand opening of a power house by the leading lady of the land, the wife of the Shire President. She had the privilege and the honour of cutting the ribbon and releasing the main switch which gave light to the town. This was of course followed by much cheering, the band played and many of the locals would get well drunk. Well, on one of these occasions the Consulting Engineer, Mr. Christie, of Christie and Gardiner, arrived by train for the grand opening and he was really hostile because our chief, Scott, a tough engineer from England, had missed the train at Spencer Street. Christie had seen Scotty arrive at the platform just as the gate was slammed shut.

Scotty was on that train all right. He had grabbed a motor bike and caught the train at Seymour. For that grand opening it was decided that the silver scissors usually kept for the job should be gold-plated. This would give tone to the occasion and they would be used on later jobs as required. Christie, however, did the wrong thing. He *presented* the Lady of the Town with the scissors as a souvenir of the occasion. We looked at each other in consternation. Scotty would surely give us a real trouncing if we parted with those scissors. So the following day he read in the local paper that the celebration was a splendid effort except that somebody had perloined the presentation scissors.

I am drifting from my theme, Mr. Chairman, and my time is running out.

When each *of you* are "Old Timers" you will know that the designer is not yet born who can foresee every problem associated with a new idea.

My time has run out. I thank you for your attention."

DISCUSSION

Question: What range did you achieve in those days?

O'Shannessy: We used to occasionally get reports of signals received over long distances but usually only a few miles around the suburbs; to get Wilson's Promontory or a ship was a real achievement!

Question: What wavelength was used?

Mr. Witt: We were supposed to operate on 400 metres, but no one knew exactly

where they were. Quite often they would be called by VIM and be asked to keep quiet. I made a hot wire ammeter which worked reasonably well for something excited by a Ford coil. As far as distance was concerned, the circle of operators was very small, perhaps over a distance of 2 or 3 miles. During the first World War many freak conditions were observed, and who was to say what our range was in the early days?

(Mr. Witt reiterated that amateurs in his time were really late in entering the field. There were many operators before his time, for example G. W. Selby in 1897 and H. W. Jenvy, who was operating before 1900, and they were getting quite practical results.)

Question: How did people become amateur operators in those days?

Mr. Witt: Things were pretty free and easy, as you can imagine. When Mr. Valsilli became Director-General of Wireless I guess we made ourselves known to him and he set the rules. It was all morse code, of course, and some of us went to school and gained a certificate in morse, but to obtain a licence it was necessary to demonstrate that you had the necessary skill.

Question: What sort of call signs did they issue in those days?

Mr. Witt: All call signs were three letter starting with X. (Author's comment: All call signs issued by 1914 were listed in "Amateur Radio" August 1970, page 10.)

Question: Mr. Witt, can you remember when the electronic valve was first used?

Mr. Witt: I can remember in Rabaul, during the war, we had what we believed was the first electronic valve and that was in 1917. We used to get news from Germany every day using this valve.

Question: What were your best distance records?

Replies: Probably from Melbourne to Wilson's Promontory; we could not get Sydney. On receiving, we used to receive Macquarie Island. The best I did during the war was Adelaide and Melbourne from Madang on 600 metres, but these were freak conditions.

Question: Someone made reference to New South Wales. Do either of you have much knowledge of what was doing in New South Wales?

Mr. Witt: I have got some information which states that the Wireless Institute of New South Wales was about six months earlier than us.

Mr. O'Shannessy: I believe that in Sydney a lot of amateurs were concerned about lightning as a lot of aerials had been struck. ■

World-Wide Communications from Hand-Held and Man-Pack Transceivers

Sam Voron VK2BVS
2 Griffith Avenue, East Roseville, NSW 2069
Phone (02) 407 1066 (7 to 9 p.m. nightly)

PART ONE

Walking along the streets of Sydney experimenting with different hand-held and man pack transceivers; enjoying amateur radio out in the fresh air. Meeting lots of interesting people and showing them the fun of the hobby; trying various antennas, matching systems and power sources. These are some of the fascinating aspects of trying to achieve world-wide communications while pedestrian with a hand-held transceiver.

Several of today's small HF transceivers can be adapted for this purpose. We will look at the Palomar PTR130K, the Yaesu FT7 and FT7B as well as modern day military back pack units.

THE PALOMAR ELECTRONICS CORPORATION PTR130K TRANSCEIVER

When this transceiver became available I thought it to be the ultimate dream for hand-held pedestrian use.

The unit is no larger than an SSB CB transceiver (Width: 17 cm, 6½ inches. Height: 7 cm, 2½ inches. Depth: 30 cm, 12 inches.)

Continuous transmit and receive from 100 kHz in the low frequency band right up to 30 MHz at the top of the high frequency spectrum.

Frequency selection via a push button keyboard mounted on the front panel of the transceiver.

All mode operation LSB or USB with or without compression, AM, FM or CW with break-in and side tone.

A squelch control which functions on all modes, including SSB.

A digital frequency readout.

An S-meter calibrated up to +40 dB over S9 and power output calibrated to 100 watts RF output.

A check list enclosed with the unit I received gave the following hand-written specifications:—

Receiver sensitivity for 10 dB S/N and transmit CW output:—

Freq. (MHz)	Receive (for 10 dB S/N on SSB)	Out (W)
1.8	.76 uV	44
3.5	.27	44
7.1	.22	82
14.2	.22	92
21.2	.22	69
28.5	.21	60

OBSERVED PERFORMANCE

Selectivity appeared quite reasonable compared to my FT901 base station transceiver.

Transmit quality on AM could be improved and transmit deviation on FM could be increased.

Receiver audio quality on AM and FM was excellent. An acoustic feedback problem on SSB receive was due to the small loudspeaker used; this was replaced by a larger speaker, which required widening of the speaker enclosure area. This solved the problem and gave excellent SSB receive quality.

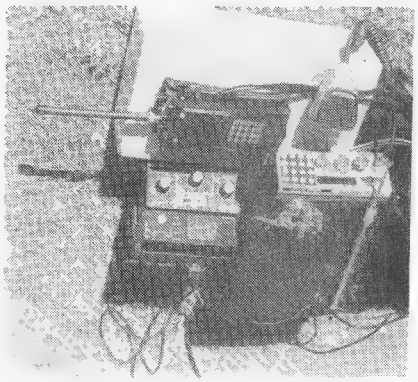
SSB transmit quality with and without compression was also quite good.

The S-meter action on SSB is quite clever with the average level of the varying signal strength being used to indicate the S reading. Instead of jumping up and down, the S-meter readings resemble those of an AM signal.

The keyboard functions permit frequency selection and at any increment from 100 Hz upwards. This enables scanning (SC button) or step (ST) frequency selection in 9 kHz increments across the medium wave broadcast band or 5 kHz across the international short-wave band or 10 kHz across the marine band or 100 Hz, providing the impression of continuous tuning across any amateur band. Selection of 25 kHz, 1 MHz or any other spacing is provided for by simply entering your requirement on the keyboard. Selection of frequency can be programmed to go either up or down and a RIT (receiver incremental tuning) control provides fine tuning of ± 2 kHz.

Cross-frequency or cross-band operation is easy. For split operation (duplex) separate receive and transmit frequencies can be entered on the keyboard so that, for example, one may transmit on 1.8 MHz and receive on 28 MHz.

The Palomar PTR 130K all mode 100 kHz to 30 MHz transceiver. Its size can be compared with the microphone and the morse key mounted on the adapted over-the-shoulder case.



The Palomar PTR 130K compared with the size of the Yaesu FT207 VHF hand-held.

THE PROGRAMME CONTROL KEYBOARD

16 push buttons are provided on the keyboard. Numbers 0 to 9 are frequency selection.

TX: Transmitter update/split operation.

UP: Move up in frequency.

DN: Move down in frequency.

SC: Scanning mode (moves frequency up or down at a slow or fast rate which can be preset by an internal variable potentiometer. For example, one can scan at two steps per second as long as "SC" button is depressed.)

ST: Step in frequency (moves frequency up or down one step each time the "ST" button is depressed).

To enter 14.200 MHz and move up by increments of 100 Hz one would press the "up" button (display does not change). Then set the increment rate which would be 100 Hz or 1, the display then reads 1. Next, depress the "ST" or "SC" button to move frequency.

The display will read 14.2001 if "ST" button is depressed once. Similar procedure is used to move down frequency.

To operate split frequency, enter the transmit frequency (say 1.8000 MHz) and depress "TX" button. Then enter the receive frequency (say 28.5000 MHz). When the microphone button is depressed the transmit frequency will be displayed.

For simplex operation, select the desired receive frequency, depress the transmit button and the set receives and transmits on the same frequency.

TRANSCEIVER CONSTRUCTION

Five double-sided printed-circuit boards make up the unit. The synthesiser board, the linear board, the filter board, the front panel display board and the power amplifier board.

Construction of each board is beautiful, resembling the workmanship and technology that goes into American made home computers.

The high reliability and low failure rate of this production method seems verified after some six months field operation.

THE SYNTHESISER BOARD

Is responsible for generating all frequencies between 100 kHz and 30 MHz. Contains the phase lock loop circuit. Extensive use of integrated circuits prefixed by SL, SCL and MC are used. The scan rate is variable from potentiometer VR1 and transceiver frequency can be calibrated to the digital frequency readout by adjustment of the trimmer capacitor across the 990 kHz crystal. Both these adjustments are located on this board.

THE LINEAR BOARD

Contains the circuitry to process the 100 kHz to 30 MHz RF so that SSB, AM, FM and CW transmit and receive facilities are available. Collins mechanical filters are switched in and out of circuit in a unique way — not by relays but by 4066 integrated circuits located at the input and output of each filter. The well known TA7205 audio IC is employed together with the SL series communications ICs.

THE FRONT PANEL DISPLAY BOARD

Provides for the 6 digital diplays as determined by the interaction between the keyboard and the synthesiser board. This board also contains the S-meter calibrate potentiometer VR401 and thet ransmitter power output calibrator potentiometer VR402.

THE POWER AMPLIFIER BOARD

A broadband (no tuning required) power amplifier stage uses two power FETs driving two bipolar power transistors biased to permit linear all-mode power amplification across the entire high frequency band with some drop-off in performance on the medium frequency range down to 500 kHz.

THE FILTER BOARD

Five double section low-pass filters are switched in and out of circuit so that no matter what frequency is selected maximum attenuation of unwanted harmonics is achieved. The synthesiser board controls which low-pass filter will be switched between the output of the power amplifier and the antenna.

FRONT PANEL SWITCHING

All modes of operation (FM, AM, CW, LSB, USB, LC, UC) are selectable from a single 3-pole 7-position switch.

A standard 4-pin microphone socket is located to the left of the front panel; moving to the right is the on/off volume and squelch control on a double shaft; then the mode selector, followed by the RIT control and the keyboard on the right-hand side of the unit.

BACK PANEL

Contains the 100 watt heatsink, morse key and external speaker sockets.

MODIFYING THE PALOMAR FOR "HAND-HELD" USE

(1) Add an on/off switch on the back panel to switch off meter lamp and digital display to conserve current.

(2) Add a 470 ohm preset pot between source and earth of the first power FET in the power amplifier board. Adjust for 1 watt output. Add a switch on the back panel to select between 1 watt (with pot) and 100 watts (shorting out the pot).

(3) Cut in half two of Dick Smith's CB carry cases, fit the halves over the Palomar for a perfect fit and apply Araldite. You now have a carry case complete with shoulder strap and antenna side mounting brackets.

(4) Mount the 5 foot centre-loaded telescopic CB whip on the side brackets provided. Drop the top section down by 1

Tony VK2NFS from Sydney takes our Palomar HF hand-held while on holidays in Brisbane. The bag on the right contains Gel type rechargeable batteries.

A size comparison between the Palomar transceiver PTR130 and a typical SSB CB radio, the Hy-Gain V set up for operation at the local park.

inch. It's now resonant on 28 MHz. Note: No ground plane is used, the antenna wire simply plugs in to the centre of the PL259 socket. I was horrified when I learned this was Dick's recommended method for his "CB carry case", but it works! Walking to the bus stop I worked a ZL on 28.5 MHz who couldn't believe I was running 1 watt and walking along the street at the same time! Coverage all over Sydney is great; I have even QSOd inside a train with nearby novices.

The cost of the unit is a few hundred more than my FT901DM. However, considering its wider scope, despite the few criticisms mentioned, I would have probably been willing to pay $300 for what this unique transceiver will do.

Since these experiments an experience of a lifetime has come my way. On a flight from Sydney to Surfers Paradise I asked the stewardess of our 80-seater jet liner if I could use my 2 metre hand-held on board the aircraft. She returned and said the pilot will let me use his radio (receive, I thought). I walked up front with a grin on my face, up the aisle, and into the cockpit. To my shock and great excitement the pilot gave me the aircraft radio microphone and said "Go for your life!" The aircraft radio was just like my Palomar but only covered 2 to 30 MHz continuous and was 400 watts SSB and 150 watts AM. There I was aeronautical mobile at 33,000 feet calling CQ on all band 80 to 10 metres; of course I was very sad the set didn't go down another 200 kHz into the 1.8 MHz band. But next time I'll plug my Palomar into their antenna!

Thinking about possible misuses of this equipment, I was told that some pilots dialled up the CB band during long flights across Australia and chatted to the truckies below. Well, I guess if a pilot is seen as a responsible user of such equipment then the difference between him and the irresponsible user is that he uses the equipment with commonsense, whereas the other responds to whatever whim takes his fancy.

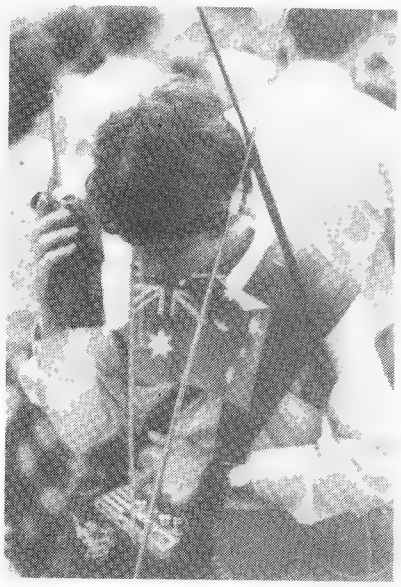
I certainly remember the sense of pleasure and excitement learning about this type of technology and am thankful to have been able to explore the ins and outs of the Palomar before fate shut its door in our faces.

The PTR130K is no longer available, as the head of the company died and the company folded after many years of operation. Note that Palomar Engineering, a company with a similar name, is not related to Palomar Electronics Corporation, and continues to operate. Stories of another company picking up the rights to produce the unit, and possible stocks of already manufactured units are being investigated by the author in the hope of once more making this unit available for amateur experimentation.

By the time this article reaches print the situation should clarify.

In the meantime those who were lucky enough to obtain a unit (a photo in a recent QST shows an American amateur using the Palomar in a Peking hotel room, together with a narrow band voice modulation adaptor) will be pleased to learn that David Olson N6BSD of 4419 Donald Avenue, San Diego, California, USA 92117 has had experience in the servicing of these units if that should become necessary in the future.

I feel that, like pilots, this ability to explore the entire waveband in times of emergency and need is a facility which amateurs can maintain in their unique position as explorers of the airwaves, as communications experts, and as responsible individuals available to serve the community at all times. Looking at the new products on the horizon it seems that the Palomar concept is what two-way radio technology is coming to. It can't be long now before the first HF hand-held similar to the 800 channel 2 metre hand-helds will become available, launching a new era of portable hand-held MF and HF amateur operation. ■



Working cross-band from 2 metres to HF hand-held, using the Palomar under licensed supervision at the ANZAC Parade march in Sydney.

(To be continued)

Further Thoughts on the Kenwood R1000

Ron Fisher VK3OM

Since writing the review on the R1000 receiver published in the February issue of Amateur Radio, I have now obtained my own receiver and, with several weeks use, I have come up with a few points perhaps of interest to both owners and prospective owners of these excellent units.

One point noted in the original R1000 but not mentioned in the review was the extraordinarily long decay time on the AGC when in the AM mode. This had the effect of blocking the receiver for several seconds when tuning off a strong broadcast signal. In fact with a signal reading S9 + 40 dB it took 15 seconds for the receiver to fully recover. In the SSB mode by contrast the AGC recovery was only about five seconds. This effect was mentioned to the distributors who claimed that this particular receiver was set up for the European market where the long AM AGC recovery was required for some particular reason. They stated that receivers imported for Australia would have a more suitable AM AGC. This does not appear to be so.

A look at the circuit shows an additional 4.7 mF capacitor is switched into the AGC line in the AM wide and narrow functions. The solution to the problem is to simply remove this. For those reluctant to attack their new R1000 with the soldering iron let me explain further. Perhaps Kenwood had an idea that the long AGC delay would not suit everyone, thus conveniently connecting the capacitor back to the main printed circuit board via two pin plastic encased plug. Just pull out the plug. To help you find it, refer to the internal view in photo 1. It is the only two pin connector in the area and it should be noted that apart from the AGC time constant, now the same for SSB and AM, there is no other change to receiver performance.

Last point is the noise blanker. As readers would no doubt have noted, I did not rate the blanker as over effective. However since using my own R1000 I have found it to be rather better than the blanker in the review receiver. In fact it is even effective on many electrical appliance noises that seem to plague suburban locations.

In conclusion, I can see that many modifications and adaptations will be thought out for the R1000. If you have any thoughts let us know. ■

PHOTO 1:
The latest in the Kenwood line of receivers — the R1000 features digital readout and coverage from 200 kc to 30 MHz.

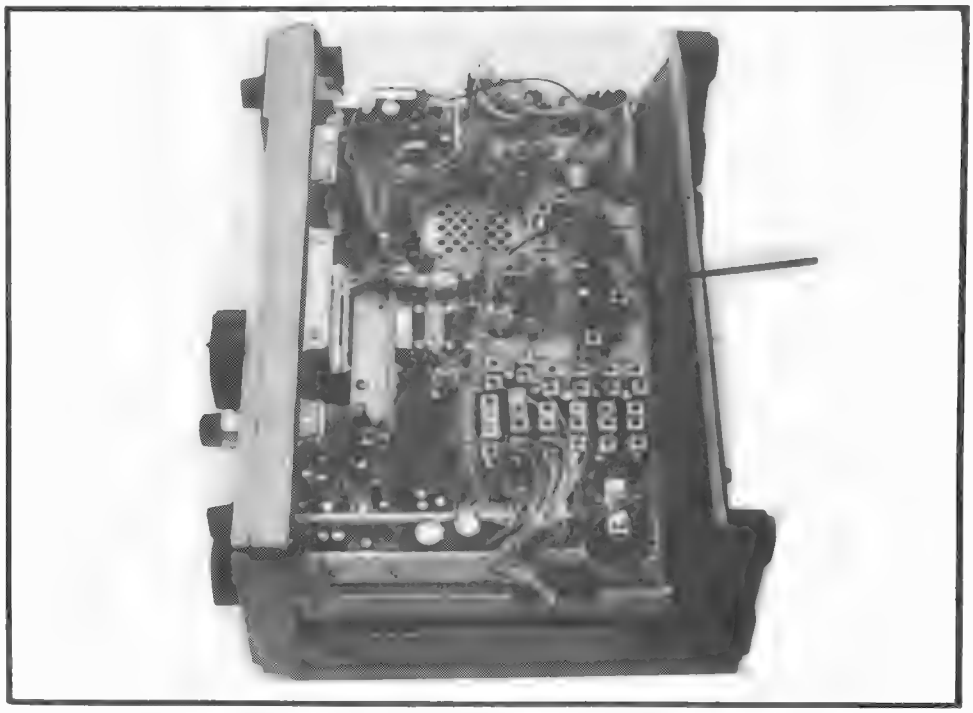


PHOTO 2:
Internal view of the R1000. The two pin plug referred to in the text is arrowed.

A Review of the ICOM IC 720 HF Transceiver

Ron Fisher VK3OM

ICOM's latest entry in the HF transceiver market, the IC-720, follows the same physical format as its predecessor, the IC-701, but has been changed electrically in many interesting ways.

Let's take a close look at just what the 720 is capable of. Like most of the new arrivals on the market, the 720 provides coverage of all amateur bands, including the new WARC 79 bands at 10, 18 and 24 MHz. However in addition to this, the 720 provides full general coverage receive facilities from about 50 kHz to 30 MHz with provision for AM, SSB, CW and RTTY reception. All of this is packed into a package essentially the same size as the older IC-701. The unique tuning system of the 701 has been improved and refined in the 720. The synthesised VFO is of course still employed but now provides greater flexibility.

While the general specifications are similar to the IC-701, let's look at the 720 and see just what ICOM claim for it. Firstly, they manage to fit 104 transistors, 17 FETs, 244 diodes and 55 ICs, plus one CPU. Quite a box full. As the photographs show, the general appearance is similar to the older 701 and is quite compatible with the current range of ICOM VHF gear such as the IC-251 and IC-551 and also the older IC-211. ICOM are to be congratulated for their policy of keeping appearance compatible with changes of model. Amateur band coverage from 1.8 to 2.0 MHz, 3.5 to 4.1 MHz, 6.9 to 7.5 MHz, 9.9 to 10.5 MHz, 13.9 to 14.5 MHz, 17.9 to 18.5 MHz, 20.9 to 21.5 MHz, 24.5 to 25.1 MHz and 28.0 to 30.0 MHz. The general coverage receive facility provides 31 MHz segments from 0 to 30 MHz. Reception actually starts at about 50 kHz, a shade lower than the specified 100 kHz. The transmitter is rated at 200 watts power input on all modes except AM, which is rated at 40 watts output (carrier). As mentioned earlier, the tuning has been improved to a marked degree and now has three tuning rates — one, ten and one hundred kHz per tuning knob revolution. The synthesised VFO is producing output in 10 Hz, 100 Hz and 1 kHz steps to provide the above tuning rates.

The frequency readout is now a very readable blue and as well as indicating frequency also indicates the mode status of the transceiver. Upper or lower sideband is indicated with a LED U or L. AM, CW and RTTY are likewise indicated with an appropriate LED display. The 720 also selects the correct or commonly used sideband for each band automatically.

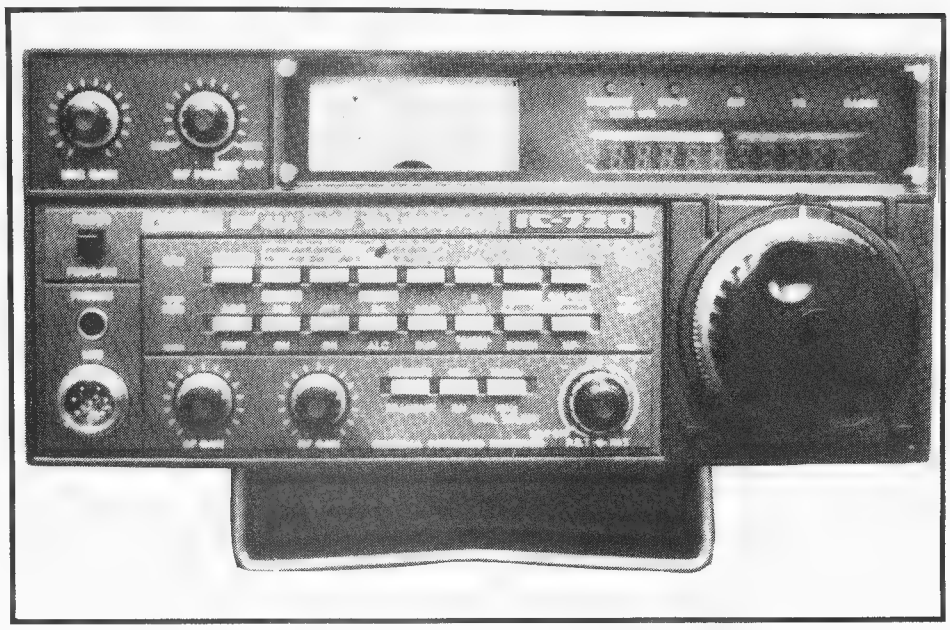


PHOTO 1: Although essentially the same in size as the older IC701, the IC720 incorporates many more features for the enthusiastic HFer.

The band change method is quite unique and does not use a band switch at all. Three push buttons select the required frequency, one giving either amateur or general coverage, the other two pulse the transceiver either up or down one amateur band or if in the general coverage mode, up or down in one MHz steps. This band change system, along with the two separate VFOs, can give some interesting combinations. For instance it is possible to set up the transceiver on two entirely different amateur bands and listen to two contacts in sequence just by selecting the appropriate VFO. You can in fact keep an ear on your 80 metre net while you are in contact with a DX station on 20 metres. As the bands are changed, the correct front end filters are switched by the motor band change system. Very neat.

The receiver uses a quadruple conversion chain. The first is an up conversion to 39.7315 MHz then to 9.0115, to 10.75 and then back to 9.0115 MHz. These last up-down changes are to provide the variable receiver selectivity by using two filters and a variable heterodyne frequency. The transceiver we had for review had filters for SSB, CW and AM installed. I believe that 720s sold in Australia will have these filters installed as standard.

ICOM have gone to considerable trouble to provide first class receiver front end performance. The receiver RF stage is a wideband push-pull device and the first mixer is a special double balanced type.

I noted with interest that ICOM have dropped their Hang AGC system previously rated highly in the IC-701 transceiver and have gone to a standard slow decay AGC system.

On transmit an effective RF speech processor is again used. Other features of

PHOTO 2: Close-up view of the IC720, showing function switches for the receive and transmit modes.

the 701 include a thermostatically controlled fan for the final transmitter stage, an automatic switch-off receiver offset tuning and the built-in SWR meter. One feature missing is the clutch release on the main tuning knob. The tension on the knob can be adjusted with a set screw from under the cabinet, but the old feature so well liked by IC-211 and IC-701 owners is gone.

Several controls are located under a small hatch in the top of the cabinet. These are CW monitor level control, frequency set, VOX delay set, SWR meter switch, RF out/collector current switch, CW delay control to set break in time delay, anti-VOX control, VOX gain control and SWR sensitivity set control. Rear panel controls include a multi-pin socket for connection to an external control unit. It appears that the earlier RM-2 or RM-3 are not compatible and as yet a suitable unit has not been released by ICOM. Most of the other connectors are standard with the exception of a low frequency antenna socket for use on the broadcast band and lower. The input to the 720 receiver is bridged through two connectors to allow a preamp to be inserted.

THE IC-720 ON THE AIR

Some of the excellent features have already been mentioned, however the 720 takes a little getting used to but once mastered the transceiver is delightfully easy to use. Setting up the transmitter audio gain controls was the most difficult. It seems that the ALC reading on the meter should only just move. The first few times on the air, I tried to talk it up to the end of the scale with resultant reports of slight distortion. While talking about the meter, this has been improved to the point where I can read it with ease. The old 701 meter was cluttered and difficult to read. Also note that ICOM have dropped their automatic dial light dimmer, not a great loss.

I found the 10 kHz per knob revolution the ideal speed. The synthesiser tunes in 100 Hz steps at this rate. The 1 kHz per revolution is ultra slow and ideal to set the pitch of the signal where required. The 100 kHz per revolution speed is selected with a push button under the tuning dial and is ideal for rapid shifting up and down the band.

I note that the electret desk microphone is no longer supplied as standard. I believe this will be available as an optional extra in the future. A standard PTT microphone with curly cord is included. If you think that you might use your SM-2 desk microphone, sorry, they now use an eight pin connector. Perhaps this means that some time in the future a scanning type microphone will be available. In fact, perhaps its strange that the 720 does not at the moment have any provision for scanning!

Power output was checked on all the amateur bands, including the WARC 79 allocations and was found to be variable. Maximum output was on 160 and 80 metres with exactly 100 watts. Power dropped as the frequency increased with a minimum of 50 watts on the 24 MHz band and strangely up to 65 watts on ten metres. It is always hard to know if this is normal or not, as at the time of testing the IC-720, our test unit was the only one in the country. Bearing in mind the preceding statement, it was interesting to note that using the general coverage receiver, WWV had a transmission on 9, 10 and 11 MHz.

The 720 is available with a choice of AC power supplies, a heavy duty type incorporating no transformer and a light duty type which has a fully regulated transformer. The latter type was supplied with our review model and incorporated its own cooling fan for the heatsink. However what has happened to the speaker ICOM used to put in the front of their power supplies? Gone! Now you have to buy an external speaker at extra cost, of course. There is a speaker in the top of the 720 cabinet, but quality from this is just not acceptable.

I plugged in a medium sized external speaker and the quality improved immediately — but up came a very noticeable hum, not audible on the internal speaker of the 720.

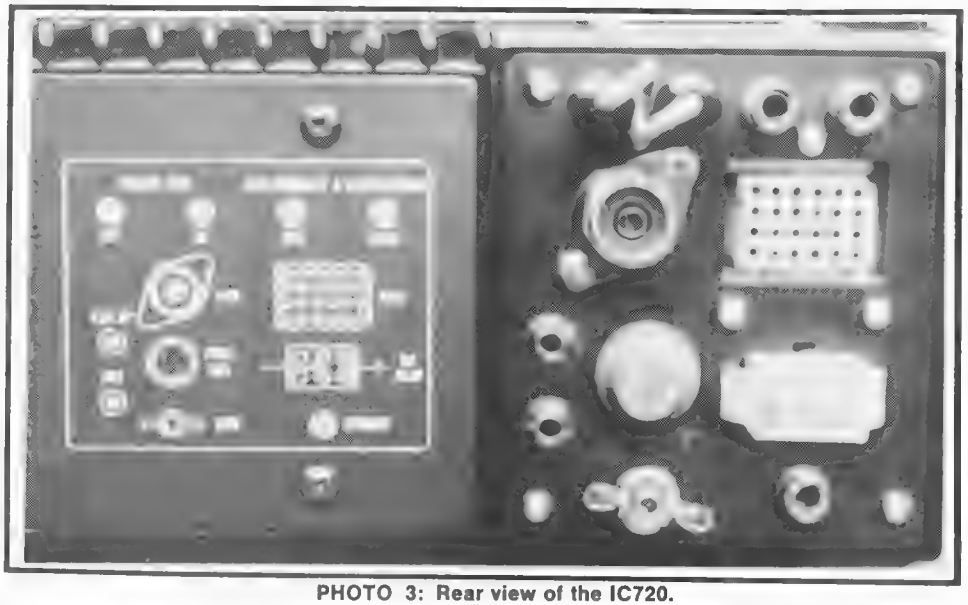


PHOTO 3: Rear view of the IC720.

INSTRUCTION BOOK

I can only guess that the instruction book will be OK. As this 720 was rushed out from Japan for early evaluation, it had the

Japanese instruction book with it, plus a draft copy of the English language edition. I will comment further when the normal book becomes available.

CONCLUSIONS

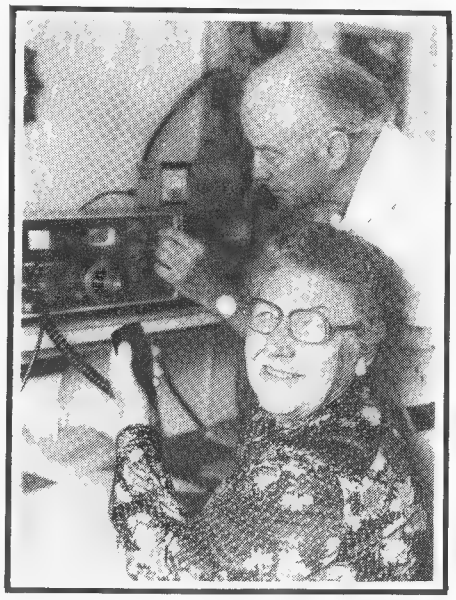
The 720 is a complex piece of gear — even more so than the 701. It of course remains to be seen just how reliable the rig is. The early 701s did not enjoy a good reputation in this respect. However it is fair to say that VICOM, ICOM's local agent, have provided excellent service and have in many cases provided free service well outside of the normal warranty period. I hope that in the future I might have the opportunity to look at the 720 again to see how it is shaping up in normal production.

Our review 720 was provided by VICOM International of 68 Eastern Road, South Melbourne, to whom all enquiries should be directed. ■

Margaret, 70, becomes Amateur Operator

— Courtesy of the Manning River Times.

There was a time when Mrs. Margaret Gerity VK2BQG, of Wootton Crescent, Taree, couldn't stand the sight or sound of a radio. She married Lester Gerity, an amateur enthusiast, in 1954.



However, until recently, Margaret avoided all contact with the radios and paraphenalia.

Now, aged 70, Margaret has studied for and won her full call amateur radio operator's licence.

"Now I'm really keen," says Margaret.

She says she took it up when they moved from Bennett's Head, Forster, to Taree, a few years ago.

"I had broken my ankle so I couldn't play sport, and it seemed a good way to meet people," she said.

She took a year of free tuition with Geoff Hunzinker of the Taree Amateur Radio Club and then in 1978 began a technical college course in radio operation.

"When I started in 1977 I was blind and dumb and deaf to everything, then I started to cotton on," she said.

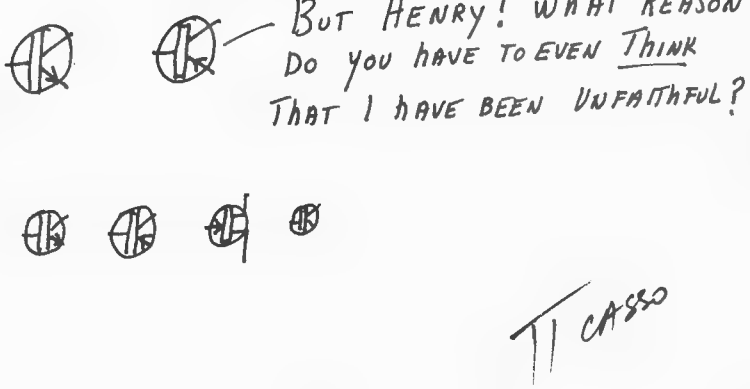
Margaret received her novice certificate two years ago. Lester, 73, is an old hand in the radio hobby, having received his first call code in New Zealand in 1928.

A former ships' operator, he is now a director of the Taree Amateur Radio Club. Margaret is a former secretary of the club.

Margaret studied for her certificate with enthusiasts of all ages, from school boys to engineers.

She says she loves the people you meet through radio, and is particularly fond of Morse Code, hoping to become really skilled in sending and receiving it. ■

Solid Status



QSP

MALICIOUS INTERFERENCE

The July meeting of the ARRL Board of Directors considered a report of the ad hoc Committee on Interference which covered, among other things, the response to the March editorial in QST on the problem of malicious interference possibly causing a crisis in amateur radio. The Board set up an interference task force to co-ordinate an educational programme, to provide a reference manual and guidelines and to provide liaison at the national level. The overall objective was stated to be the encouragement of the amateur radio service "to continue to justify its reputation as a self-policing service by the reduction or elimination of all types of interference on amateur frequencies".—QST September 1980.

An article by Doc Omelin in Worldradio September 1980 comments "When radio amateurs cry for help, they are admitting that we are no longer able to be self-policing". The problem of proving "maliciousness" is seen as a difficulty when read with "harassment", "carelessness" or "inadvertance". "All of us," he writes, "should make sure that we are not interfering with other stations in any way that might be considered 'malicious'. Above all, don't get involved in hassles with amateurs who you think might be causing 'malicious' interference." ■

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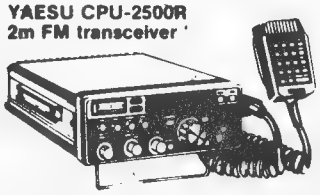

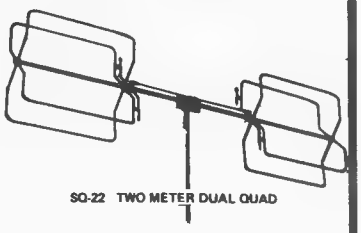

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Rally II — WICEN Exercise

R. E. Cordukes VK4CD

Last June, the Townsville Amateur Radio Club, with the help of SES, combined forces for a WICEN exercise to provide radio communications for the Townsville Sporting Car Club's rally held during the Townsville Pacific Festival week.

The purpose of the exercise was to provide amateurs with the opportunity to set up radio stations in remote situations, to operate for extended periods, to compile accurate messages and reports, and to send, relay and receive these messages and reports.

The car rally was to start in Townville at 1500 GMT on Saturday, 14th June, 1980. The first car was due to finish at 0615 GMT on Sunday. During these 15 hours, competitors would pass through more than 30 checkpoints as they sped over forestry roads an trails 180 km north to Cardwell.

PREPARATIONS

Bill VK4XZ assumed command of planning the communications network. His task was to find two radio systems that could operate from each checkpoint to headquarters in Townsville. Traffic congestion from the 30 checkpoints had to be avoided, and an alternative system had to be available in case of failure of one system. Two reconnaissance parties experimented from the various checkpoints some weeks before the exercise. The results of these showed the following:—

HF, 3.605 MHz, or SES HF, 3.732 MHz, was the logical first choice. The range of about 200 km from Townsville and the possibility of erecting dipoles with ease confirmed this frequency to be suitable.

VHF was selected as the second system. This was a very interesting challenge. How could VHF be effective and reliable over 200 km? Direct QSOs could be made with Townsville on 146.5 MHz from about 30-40 km to the north. This would be suitable for the nearby checkpoints.

Mario VK4MS very quickly put the answer together. He built a double VOX system that would allow direct QSOs with Townsville over the 200 km. Control points would transmit on 146.5 MHz, Mario would receive this at his QTH at Ingham and automatically retransmit on UHF, 432 MHz, to Townsville, 120 km to the south. The operator at Townsville would reply on UHF and be received by the original station on VHF.

It was a simple system, and it worked. This overcame the need for any relay system for reports. In effect it meant that a second reliable system was the second choice.

Some control points could also use VHF and UHF direct, others could use SES VHF, 168 MHz, and UHF, 459 MHz.

PHOTO 1: SES and WICEN control point at Ingham.

PHOTO 2: Bob VK4NMV and Ian VK4NFU compiling reports at a checkpoint.

Another VHF system that was available was via the Cairns repeater, VK4RCA, on Mt. Bellenden Ker ("She's a beaut, Mate!").

Operators in the Cardwell area had access to the repeater, 170 km to the north. This is also easily accessible from Castle Hill

PHOTO 3 (left) shows a comfortable operator operating portable with his makeshift shack, Robert VK4ZRK. PHOTO 4 (above) from left to right, pictures Evylyn VK4EQ, Charlie VK4BQ and Rob VK4NVO looking tired but happy at the mud in their car.

PHOTO 5 (below) shows a rally car arriving at a checkpoint.

in Townsville, 350 km south. So such a link would travel north then south to Townsville.

THE RALLY

The difficulties of providing communications had been overcome. The success now rested on the radio operators' skills. All were briefed on procedures for sending and receiving messages. Checkpoints were allocated, and the car rally was under way.

Throughout the 15 hours of the rally more than 60 transceivers were used to pass over 1200 reports and messages. All systems worked with success.

There were a few minor difficulties. Charlie VK4BQ and Evelyn VK4EQ spent two hours bogged down on a forestry road. Charlie used all his skills to prise his car out of the mire, only to sink down again a little further up the road. Finally at about 2100 hours, a four-wheel drive vehicle pulled him out and dragged him to his checkpoint. After lighting a fire to warm up their cold, wet and muddy feet, Charlie and Evelyn erected a dipole and were on air 15 minutes before the first car arrived.

There were generators that were a little stubborn to start and antennas that fell down. But these difficulties were easily overcome.

At all times, headquarters in Townsville was kept informed of the position of the car rally competitors. The only vehicles that got lost were a couple of service vehicles. One of these hit a bridge while trying to reach the crew. The only injuries were damaged cars and morale.

At 1000 hours on Sunday, Bill VK4XZ declared the exercise complete. All vehicles were safe and accounted for. Some had limped into Townsville, some were towed, and others were pulled on trailers. Twenty-four of the 36 competitors reached the finishing line.

The tired and weary operators from TARC and SES straggled back to Townsville knowing that Rally II had been a success. A debriefing session later in the week concluded that the planning, the reconnaissance of the area, the flexibility of amateur radio, and the willingness and co-operation of participants had brought about this success.

A final comment must be directed to the goodwill engendered between both SES and Amateur Radio Club members. Without this the operation would have failed. Throughout the 1200 manhours of the more than 60 members the foundation of a successful Rally III is certain.

R. E. Cordukes VK4CD. ■

The Royal Navy Amateur Radio Society, Past, Present, Future

Terry Clark VK2ALG
P.O. Box 537, Albury, N.S.W. 2640

The Royal Naval Amateur Society was formed in 1960 by radio amateurs who were then serving members of the Royal Navy. Most belonged to that noble breed of men, the CPO TEL. That is Chief Petty Officer Telegraphist. The first meeting took place in the PO's Mess at HMS MERCURY, which is the RN's signal school, just north of Portsmouth in England. In order that the Society could be established as a "Naval" Society, their Lordships at the Admiralty laid down the stipulation that all members and former members of the Royal Navy should be eligible, even though they were not in or form the communications branch.

Hence membership of the RNARS was open to all serving and former members of the RN who had an interest in amateur radio, or just listening to short-wave broadcasts. This has turned out as a good ploy to enable membership to be given to interested parties who are not licensed radio amateurs.

The Royal Marines are also part of the RN, and hence eligible for membership. So, too, are the girls of the WRNS and the members of the Royal Fleet Auxiliaries (the merchant ships which supply the fleet) and the Royal Naval Wireless Auxiliary. Plus, of course, the wavy-navy lads of the RNVR and later the RNR.

Thus the membership grew at a steady rate. Later on the British Merchant Navy people were also permitted into the Society as Associate Members, as well as civilians who had been employed by the Navy — such as civilian instructors and Navy Dockyard personnel.

At this stage the Society was a solely British organisation. But this was not to last. A great decision was made in the late 60s to admit the Commonwealth Navies and Merchant Navies. A further broadening of membership took place in the early 70s when all Western Bloc Navies and Merchant Navies were encouraged to join. Membership classifications were revised, the only difference being Corporate Members who were British and Commonwealth; all other nationalities being classed as Associate Members. No difference in membership grade was shown between Naval and Merchant Navy personnel, the only difference being allegiance to Her Majesty the Queen. At no time was there any difference shown to licensed amateurs and short-wave listeners.

So from being a purely Royal Naval Society the organisation has grown into a truly international Society of former seafarers. The name has remained the same as The Royal Naval Amateur Radio Society and indeed we are still based at the RN Signals School at HMS Mercury.

One of the earliest members was a naval doctor, Lt. S. J. (Jim) Lloyd. His Society numbers is RNARS 0049, and he joined within the first year of forming the Society. Currently, Surgeon Rear-Admiral S. J. Lloyd, OA, QHS, RAN, Jim is well known on the amateur bands as VK1CDR, formerly VK3CDR.

Membership in Australia was slow to begin with, mainly being members from England who had emigrated to Australia. Then we began to get applications from former RN personnel who had also migrated here. There is no equivalent organisation for ex RAN radio amateurs and there was a fair amount of bias against the "pommy" RNARS.

In December 1978 the isolated members of the Royal Naval Amateur Radio Society in Australia got in touch with each other. There were only 18. They arranged to hold a radio "net" every Monday night on 3613 kHz and keep in touch. Publicity was sought and received in amateur radio journals and naval magazines seeking new members and trying to point out the fact that the Society was open to serving and former members of the Royal Australian Navy and the Australian Merchant Navy.

As a result we now (April 1980) have 114 members in Australia, with further applications in the pipeline being processed. A majority of these members are ex RAN and several are still serving in the Royal Australian Navy. Not all these are licensed radio amateurs; we have our share of SWL members.

The Society has approximately 1,000 members spread world-wide. They represent most major navies and merchant navies. The largest "group" outside the UK is here in Australia, followed by 65 in the USA, 38 in Europe, 28 in Canada, 23 in New Zealand and 16 in South Africa. Members are also located in Japan, Hong Kong, Solomon Islands, Ocean Island, and the Falkland Islands.

When the Edinburgh class (6 in. guns) cruiser HMS Belfast was presented to the British Nation for use as a naval museum the Society approached the Belfast Trust with an idea of assisting in the radio side of things. The RNARS was given the Bridge Wireless Office and has restored the naval equipment and established a permanent exhibition amateur radio station, and HMS Belfast, thanks to the RNARS, is now well known on the airwaves. Her call sign is G4HMS.

Recently the British Home Office, which controls amateur radio in the United Kingdom, allocated three special call signs with special GB prefixes to the Society. These are to be used only on special occasions. HMS Belfast uses GB2RN (phonetically Great Britain Two Royal Navy) whenever the ship is open to the public. The headquarters station G3BZU at HMS Mercury uses GB3RN on open days in Portsmouth Naval Dockyard. The third GB call sign has been allocated to the RNARS station at Yetovill Naval Air Station, GB2FAA (phonetically Great Britain Two Fleet Air Arm).

In October 1979 and because of the growing membership in Australia, the Australian Branch was formed. This exists within the world-wide Society, but does give a form of national feeling within the members down-under. The Manager of the Australian Branch is Terry Clark VK2ALG, in Albury, NSW; the Treasurer is Chris Dodd VK6DV, in Perth.

The world-wide Society publishes a quarterly newsletter and now the Australian Branch publishes its own newsletter at a small additional levy on Australian members. This journal is called the AUSTRALIAN SIGNAL and is edited by Mike Thorne VK3BKK in Melbourne, and is posted to all Australian Branch members. It is solely concerned with the Australian Branch and activities within Australia.

In 1979 a very special person, Mrs. Florance McKenzie, OBE, Mrs. Mac to her friends, was made an honorary member of the RNARS. The only station operating from a Naval shore establishment, VK2BNR at HMAS Nirimba, near Sydney, is also part of RNARS. It is not only the men that

are welcome. Serving and former members of the WRANS are most welcome, and two of our most active members in Australia are former Navy girls.

Because of the experience of the RNARS in restoring the Bridge Wireless Office on board HMS Belfast, the Maritime Trust of Australia were more than glad to accept the offer of the Australian Branch to carry out a similar project on board HMAS Castlemaine.

The task ahead of us will be a long and hard one. When the Navy handed over HMAS Castlemaine in 1974 they had completely stripped the W/T Office of all equipment and cut all cables. Like Mother Hubbard, the office was bare.

A meeting of our Victorian members was called on board the ship on Friday, February 1, 1980. At that meeting a group within the Australian Branch was formed to oversee the project. The group, known as the "RNARS HMAS Castlemaine Group", is under the chairmanship of Mike Thorne VK3BKK. Two other members should also be mentioned. The project comprises of two overlapping jobs. Restoration of the W/T Office to its former glory is being handled by John Powell VK3CIE, and the installation of the amateur radio station is being looked after by Jeff Fletcher VK3NLG.

Most of the original equipment from HMAS Castlemaine has been located and is currently being restored before being re-installed.

The ship has received a new licence to transmit. Her call sign was originally VK3BZU. However, thanks to the generosity of the Minister of Posts and Telecommunications, HMAS Castlemaine has received a permanent call sign from the repeater "R" series. Her call sign is now **VK3RAN** (phonetically Victor Kilo Three Royal Australian Navy).

HMAS Castlemaine, using the VK3BZU call sign, has been on the airwaves, though operation has been somewhat spasmodic owing to the need to spend more time working in the W/T Office than operating. However, regular skeds are held between the two preserved warships, HMS Castlemaine and HMS Belfast. Communication has also been made, causing utter confusion, with our headquarters at HMS Mercury. This was because both G3BZU and VK3BZU tended to confuse a few of the unwary.

To date HMAS Castlemaine has worked all continents using a temporary long wire aerial from the temporary shack in the Chart Office (whilst the W/T Office was being painted) up to the yardarm then down after to the ensign staff. An unusual problem was that the wire passed directly above a 40 mm Bofers anti-aircraft gun and the direction the barrel was trained did affect the SWR. However, once the board-band aerials are rigged it will remove the necessity of tuning the aerial with a Bofors gun!

VK3RAN will be operated whenever HMAS Castlemaine is open to the public, which is every weekend plus public holidays and Navy Days. RNARS members will be on hand to explain the various items of equipment in the W/T Office and Naval communications in general.

We anticipate a slight problem with the new call sign of being accused of being pirates. However we will be operating under the Australian Naval Ensign, not the Jolly Roger. The only ships permitted to use that flag were submarines on offensive patrol during the war. Hopefully, through "Amateur Radio", the significance of VK3RAN will be explained to all amateurs.

Please note: Contacts with VK3RAN will now count double points for the Endeavour Award.

For the future, HMAS Diamantina will be going to Brisbane and be operated as a naval museum by the Queensland Maritime Museum Association. RNARS will be restoring and operating from the W/T Office of HMAS Diamatina. There will then be three preserved warships on the amateur bands:—

Cruiser HMS Belfast G4HMS, GB2RN.
Corvette HMAS Castlemaine, VK3RAN.
Frigate HMAS Diamantina, VK4??? (possible VK4RAN).

All of these amateur stations are manned by former Navy operators and members of the Royal Naval Amateur Radio Society.

If any readers would like more details on the RNARS they should write to the Australian Branch Manager, RNARS, Box 537, Albury, NSW 2640, or to our headquarters, RNARS, HMS Mercury, Leydene, Portsmouth, England, UK.

The Australian Branch nets are on Mondays at 1030 GMT on 3613 kHz SSB, and Tuesdays at 1030 GMT on 3527 kHz CW. Please note: 2m style operation is used — leave a pause before transmitting to allow other stations to check into the nets. Please be patient on the Monday night SSB net. With over 30 stations on net you must be prepared to wait for your turn. ■

New Zealand's New 2 Mx FM Repeater Band Plan

In about 1970 New Zealand introduced FM repeaters to the two-metre band. The plan had seven FM repeater channels with inputs above 146.2 and outputs below 145.8 MHz and a 700 kHz split. All this is to change.

At Greymouth, New Zealand, in late May, the Annual General Meeting of the New Zealand Association of Radio Transmitters (NZART) approved a plan which will shift the FM repeaters to the band 146 to 148 MHz and use 600 kHz offset. The change may take two years to complete.

This move is very welcome — the standardisation of offset throughout the world is at last almost complete. It will assist trans-Tasman travellers and communication and strengthen the ties between amateurs on both sides. No need to change crystals when visiting now!

The plan has provision for fifteen repeater channels on 50 kHz spacing — the same 50 kHz channels as in the Australian plan. Channels are to be named by three digits only, again the same as the Australian system but with the final figure dropped off.

Simplex channels are to use 50 kHz spacings but offset by 25 kHz. This is so that intermodulation products originated by simplex operation will fall between repeater inputs. Simplex channels will be identified by four-digit numbers.

New Zealand is very much smaller than Australia and yet has nearly 40 repeaters. The topography is such that many repeaters are needed in some areas to get satisfactory VHF coverage. So the problem of intermodulation is probably of more concern than in Australia.

A mixture of old and new systems may exist for about 12 months. If you intend to visit New Zealand and take your rig with you, a note to the Chairman of the NZART Frequency Management Working Group, c/- Box 40-212 Upper Hutt, New Zealand, will bring you up-to-date information on the sites of the old and new repeaters. ■

QSP

NICADS

In June/July 1980 Rad. Comm. Technical Topics, Pat Hawker refers to a series of experiments carried out by G3KQR on a large batch of second-hand nicads. It was noted that old cells had lost weight due to gassing and loss of fluid. The gassing vent in the sealed cells is under the positive terminal. Access is gained with a hypodermic thrust vertically through the top, through the rubber (which self-seals) and into the cell. Alternation suction and pressure will allow topping up to be done using distilled water — old cells used as much as 3 ml of water. Hundreds of cells were given a new lease of life in this manner. There seems to be no practical way to replace any loss of hydroxide which would probably result in a medical emergency rather than a revitalised battery. ■

ANTI-SLIP MATERIAL

Ever tried holding an assembly while both hands are busy soldering or unsoldering a connection? In June/July 1980 Rad. Communication "New Products" is described an elastomer named "Stop Slip" put out in flexible mats of two thicknesses, 1 mm and 2mm, up to 1 metre square or in rolls in green, red or yellow for 2 mm and blue for 1 mm thickness. It possesses an incredibly high coefficient of friction, so much so that any flat object placed on a mat will stay in place even when the mat is tilted almost to vertical. It holds small components so that they cannot inadvertently blow away and it offers a scratch-preventive surface to work on. Tackiness is inherent, it does not gradually decrease and is not affected by repeated wet mopping. ■

Queensland Amateur Radio Display

PHOTO 1 (right) shows the amateur radio station in action. At left is Angus VK4NPL/ZMG and at right Jack VK4AGY. PHOTO 2 (below) shows an overall view of the station with Barry VK4NAD/ZSB in the background.

PHOTO 5: Long distance work has always captivated the hearts of these interested in amateur radio. The QSL cards demonstrate the wide range of countries workable through amateur radio.

The Wireless Institute of Australia, Queensland Division, held a very successful Amateur Radio Display in the Queensland Museum from Sunday, 14th September, to the 20th, under the guidance of Jack VK4AGY. Several hundred persons inspected both the active and static displays which consisted of a working model amateur radio station, home computer, home-brew gear, video film show, vintage receiver, World War II equipment and test gear, converted transceivers (both hand and home base), exotic and rare QSL cards, photos depicting amateur radio activities and a typical radio club magazine. ■

Photos by David VK4AFA

PHOTO 3: Part of the static display incorporating a vintage receiver, modern communications receiver, home brew gear, converted transceiver and special handouts.

PHOTO 4: Part of the active display incorporating a home computer with Barry VK4NAD/ZSB at controls.

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The Physics and Chemistry of Fire

Fire or combustion is normally the result of fuel, oxygen and an initial source of heat combining in suitable quantities. The consumption of a material by fire is a chemical reaction in which a heated substance is combined with oxygen. Heat, light, smoke and toxic gases are produced.

The net production of heat by a fire involves both heat producing and heat consuming reactions, with more heat being produced than is consumed.

Heat is required:

— to produce vapours and gaseous decomposition products at the surfaces of solids and liquids. Actual combustion involves gases or vapours ultimately mixed with oxygen molecules.

— to break up the molecules of oxygen and flammable vapours and gases.

Heat is produced:

— when new molecules are formed; these are some of the products of combustion.

THE PRODUCTS OF COMBUSTION

Heat, light, smoke and toxic gases are produced by fire. In a very hot, well ventilated fire, combustion is complete. All the carbon is converted to carbon dioxide, all the hydrogen to steam, and oxides of various other elements such as sulphur and nitrogen are produced.

This is not the case in most fires where some of the intermediate products, formed when large complex molecules are broken up, persist. Examples are hydrogen cyanide from wool and silk; acrolein from petroleum; acetic acid from timber or paper; and carbon or carbon monoxide from the incomplete combustion of carbonaceous materials. As the fire develops and becomes hotter, many of these intermediates, which are often toxic, are destroyed, e.g. hydrogen cyanide is decomposed at 538°C.

Small airborne particles of partially burnt carbonaceous materials form smoke, which is often thickened by steam.

THE FIRE TRIANGLE

Fire has three essential ingredients: fuel, oxygen and heat — the so-called fire triangle.

Fire occurs where these elements occur together. If one or more of the elements of the fire triangle is removed, the fire will be extinguished. This can be done by:

— cooling the fire to remove heat, usually with water,

— starving the fire of fuel,

— smothering the fire by limiting its oxygen supply.

One means of smothering a fire is to drive away the oxygen containing air from the vicinity of the fuel and to replace it with carbon dioxide or other gases which will not support combustion.

Another technique is to apply a dry chemical powder in the form of a cloud or one of a special group of vaporizing liquids called halons. These extinguish fire by interfering with the chemical reactions of the flame.

HOW FUELS BEHAVE IN A FIRE

Solids

Ordinarily, combustible solids do not combine directly with oxygen when they burn. They give off vapour and gaseous decomposition products when they are heated, and it is the vapours or gases which actually burn in the characteristic form of flames. Thus, before a solid can be ignited it must be heated sufficiently for it to give off flammable concentrations of vapours. Glowing, which is combustion in the solid state, is characteristic of materials in the final stages of a fire's decay when the flammable gases and vapours have been burnt away, or when the production of the gases and vapours have been suppressed, e.g. tobacco is treated to inhibit flaming.

Solids with larger surface areas in relation to their volume exposed to heat and oxygen in the air burn more readily than those which are more compact.

Textiles as fibres or fabrics, foamed rubber, foamed plastics, thin sheets of plastic, paper and corrugated cardboard, combustible dusts and shavings, are all common examples of materials with large surface areas in relation to their volume. Materials with relatively small surface areas also burn readily when involved in a well established fire.

Combustion is self-propagating; burning materials produce heat which causes more of the solid to evaporate or decompose and be ready to burn, until either the fuel or oxygen is exhausted, or the fire is extinguished in some other way.

Dusts

Combustible dusts are particularly hazardous; they have a very high surface area to volume ratio.

When finely divided as powders or dusts, solids burn quite differently from the original material in bulk. Dust and fibre deposits can spread fire across a room or along a ledge or roof beam very quickly. On the other hand accumulations of dust can smoulder slowly for long periods giving little indication that combustion has started until the fire suddenly flares up, possibly after the premises have been closed for the night.

Many combustible dusts produced by industrial processes are explosible when they are suspended as a cloud in air. Even a spark may be sufficient to ignite them. After ignition, flame spreads rapidly through the dust cloud as successive layers are heated to ignition temperature. The hot gases expand and produce pressure waves which travel ahead of the flame. Any dust lying on surface in the path of the pressure waves will be thrown into the air, and could cause a secondary explosion more violent and extensive than the first.

Liquids

As with solids, a vapour has to be produced at the surface of a liquid before it will burn.

Many common flammable liquids give off flammable concentrations of vapour in air without being heated, sometimes at well below room temperatures. Petroleum spirit, for example, gives off ignitable vapours at all temperatures above approximately —40°C. The vapours are easily ignited by a small spark of flame. Other liquids, like solids, need to be heated to a point when sufficient vapour is produced. Examples in this category are fuel oil and white spirit.

The rate of vapour evolution is also related to the surface area of liquid exposed. For any flammable vapour there are maximum and minimum concentrations of vapour in air beyond which it cannot burn. When the mixture of air and vapour is too weak there is insufficient fuel for burning; when the mixture is too strong, there is insufficient oxygen.

If the density of a vapour is greater than air, as is normally the case, flammable concentrations may collect at low levels,

PROPERTIES OF SOME COMMON FLAMMABLE LIQUIDS

	Flammability limits % by volume in air	Flash point °C	Vapour density (air = 1)	Autoignition temperature °C
Acetone	2.6 -12.8	—18	2.00	535
Benzene	1.4 - 7.1	—11	2.77	560
Carbon disulphide	1.25-44.0	—30	2.64	102
Ethyl acetate	2.2 -11.4	—4	3.04	460
Ethyl alcohol	3.3 -19.0	+13	1.59	365
Hexane	1.2 - 7.5	—22	2.97	233
Pentane	1.5 - 7.8	—49	2.48	285
Petroleum spirit	1.3 - 6.0	—43	3.0-4.0	250-400
Toluene	1.3 - 7.0	+4	3.14	535
White spirit	1.1 - 6.0	+38	3.9	232

PROPERTIES OF SOME COMMON FLAMMABLE GASES

	Flammability limits % by volume in air	Vapour density (air = 1)	Autoignition temperature °C
Acetylene	2.5-100	0.91	305
Ammonia	15.0-28.0	0.58	630
Pentane (commercial)	1.8- 9.0	1.9-2.01	410
Carbon monoxide	12.5-74.0	0.97	570
Ethylene	2.7-36.0	0.98	425
Formaldehyde	7.0-73.	1.0	424
Hydrogen	4.0-75.0	0.07	585
Methane	5.0-15	0.55	538
Propane (commercial)	2.2-10.0	1.4-1.56	450

PROPERTIES OF SOME COMMON COMBUSTIBLE SOLIDS

Material	Ignition temperature °C	Autoignition temperature °C
Wool	200	—
Paper/newsprint	230	230
Pine	220-230	—
Cotton	230-266	254
Polymethyl methacrylate (perspex)	280-300	450-462
Rigid polyurethane foam	310	416
Polyethylene	341	349
Polystyrene	345-360	488-496
Polyester (glass fibre filled)	346-999	483-488
Polyvinyl chloride	391	454
Polyamide (nylon)	421	424
Phenolic resins (glass fibre filled)	520-540	571-580

e.g. at floor level or in basements, and can travel considerable distances to a source of ignition and flash back.

Gases

Gases are commonly stored in cylinders under pressure. In some cases the pressure is great enough to liquefy some or most of the gas. Very unstable gases cannot be stored in this way, e.g. acetylene, which is liable to decompose violently, is dissolved in acetone in cylinders.

When compressed gas is released from a container, it expands rapidly. Therefore even small leaks release relatively large quantities of gas, which is already in the state for combustion to occur. If liquefied gas cylinders are not stored and used upright, defective valves may leak liquefied gas which produces even greater volumes of gas on decompression.

FIRE PROPERTIES

Fire point — the lowest temperature at which a liquid gives off sufficient flammable vapour to produce sustained combustion after the removal of the pilot source.

Flash point — the lowest temperature at which a liquid produces enough vapour to produce a flash on the application of a small pilot flame.

Ignition temperature — the temperature to which material has to be treated for sustained combustion to be initiated from a pilot source.

Autoignition temperature — the temperature at which the heat evolved by a material decomposing under the influence of heat is sufficient to bring about combustion without the application of an external source of ignition; this tends to be higher than the ignition temperature.

Flammable limits — the flammability (or explosivity) limits are the minimum and maximum concentrations of gas or vapour in air which can be ignited and sustain a self-propagating flame.

Spontaneous heating — this is a biological or chemical reaction in which heat is evolved at normal ambient temperatures. In some instances, this heating effect is sufficient to lead to spontaneous combustion. Spontaneous combustion can result from:

— combinations with atmospheric oxygen, e.g. vegetable and animal oils finely dispersed on fabrics.

— the action of micro-organisms, e.g. in hay. Moisture is essential to the heating of vegetable matter by micro-organisms. Micro-organisms are killed by temperatures of about 75°C or above, but once this temperature has been reached atmospheric oxidation can proceed and continue spontaneous heating until the ignition temperature is reached.

Reprinted from International Civil Defence, No. 294, December 1979. ■

QSP

SECURITY

The amateur works hard to get a licence and then sets out to buy expensive equipment or makes and assembles, also at considerable cost.

He then sets out to advertise by erecting a tower, high masts and aerials to tell anyone who sees them that he has radio gear.

It's so easy for the criminal type to locate and spot the pickings, and now with CBers chasing higher power, other bands, etc., the demand for hot radio equipment is a constant threat. How many amateurs go to any trouble at all to protect their equipment, or do they say it won't happen to me? Even to just list serial numbers and to place the list in a safe spot is the first essential job so that the equipment can be traced and identified. Next time you go around and lock up for the one or two days away, just think how easy it would be for the criminal to get into your shack. What an unpleasant thought to arrive home to find your favourite piece of gear gone. Any amateur has the know how and the ability to make up and install a simple alarm. Why spend hundreds of dollars on equipment and not give it some protection? Magnetic switches and other types of bugs are readily available and a simple control and siren can easily be made. Even a light left burning at night or a radio playing can be a deterent well worth the effort.

Keith 3ASS. From Western Zone News No. 3. ■

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FROM: WESTLAKES AMATEUR RADIO CLUB
BOX 1, TERALBA 2284

Chinese Study Amateur Radio

Mr. Cheng Ping, the Secretary-General of the Association of Radio Sports of the Peoples Republic of China, Mr. Wong Xun, the Assistant Secretary-General of the Association of Radio Sports, and Mr. Yu Zai Qin, a member of the China National Federation of Sports, were guests at the Amateur Radio Festival 1980, which was held at Marumi, Tokyo, from the 22nd to the 24th August under the sponsorship of JARL.

The Chinese visitors spent almost three days at the Festival inspecting exhibits of amateur radio equipment and seeing amateur contests and competitions.

Naturally they met many Japanese radio amateurs and also visitors from Australia, Sweden and the United States. They also spent some days visiting amateur stations in Tokyo, Osaka and Kyoto.

They told their Japanese hosts that in the Peoples Republic of China emphasis is placed upon the acquirement of morse code skills and fox hunting.

The Association of Radio Sports of the Peoples Republic of China is an affiliated organisation of the China National Federation of Sports. ■

Mr. Cheng Ping, Secretary-General of Association of Radio Sports of the Peoples Republic of China, operating a VHF transceiver at the home of Mr. Shozo Hara, President of JARL.

Mr. Shozo Hara JA1AN, President JARL, with Mr. Cheng Ping, Mr. Wong Xun and Mr. Yu Zai Qin from Peoples Republic of China, operating at the Amateur Radio Festival 80 in Tokyo, in August.

A Morse code class in Peking.

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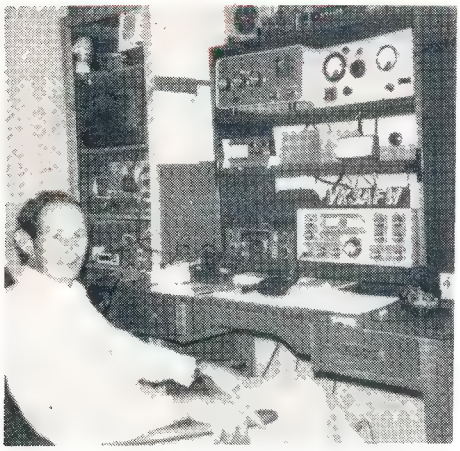
NOVICE NOTES



Edited by Ron Cook VK3AFW

BUYING A SECOND-HAND TRANSCEIVER

So you have just received your new licence; now what to do about a station? Before proceeding further let me say that the transceiver is the second most important piece of equipment — the most important is the antenna. This should be as big and as high as your budget, family, neighbours and the local council will allow. Having extended yourself to erect a good antenna system you will probably find that a new state-of-the-art transceiver is beyond your means. Now what to do? You could build a simple CW rig and a direct conversion receiver such as those in AR September 1980 and December 1978. If this is for the moment beyond your expertise (and I doubt that) then you could try visiting a kindly uncle who may lend you a spare rig. Failing that then there is the second-hand market.

WHERE TO LOOK

There are two places to look, the surplus stores and advertisements such as HAMADS in AR. There is very little military equipment on the disposal market suitable for the novice. Conversion of military, CFA, marine and CB equipment requires detailed information on the procedure and often the result is not as good as a commercial amateur bands rig. So, back to HAMADS. With the recent large sales of all solid-state rigs there must be thousands of old valve and partly solid-state rigs in VK that are just gathering dust. They may be up to 15 years old and so can be bought at very reasonable prices. With a little work they can all be made to work "just like new"; some of the all-valve units will benefit from a preamplifier on 28 MHz. You might even find a set less than a year old.

WHAT IS AVAILABLE

To try and see what may be available in the future I made a survey of HAMADS over the last 12 months. I have excluded rigs with an average price exceeding $600 and have tabulated the results. The reason for the $600 limit is that new novice transceivers can be bought for about this sum.

Nearly 60 per cent of the transceivers in the survey were from **Yaesu. Kenwood** was the next with about 14 per cent. The most popular sets were the FT200, FT101 and the TS520, in that order. **Uniden** weighed in at just over 5 percent and **Atlas** was last at just under 2 per cent. Only a few of the sets are current models and most give full coverage of 80 through to 10m and use two output and one driver valve in the transmitter. Most sets were offered with operation from an AC supply and some such as the three most popular sets (see above) also came with a DC-DC supply. Generally the PEP outputs exceed 100 watts so modification of the final stage is required. The agents for the set can give details and are usually quite happy to do so. It is often just a matter of changing one wire and removing one valve.

HOW MUCH?

For $250 or less there is the **Galaxy III,** which could be up to 16 years old and covers 80, 40 and 20m only, or an FT400, which could be up to 12 years old. I also noted an elderly **Hallicrafters HT37** 5-band transmitter for $130, which is a bargain for the operator with an FR7, etc.

From $250 to $350 there were **FT200s, Galaxy Vs,** a **Heathkit SB100, Swan 350s** and **500s** and an **FT75** and an **FT7.**

In the $500 and down range there were early models of **FT101** and **TS520, FTDX401/560, Uniden 2020, Atlas 215, TS120Vs,** an **FT75B** and **FT201.**

HOW TO BUY?

If you see a promising item don't delay. The seller may have advertised elsewhere and spread the message by word of mouth. The fastest method is an STD call. Establish whether the rig is still available. Leave your number if the set has been sold but not paid for — these deals sometimes fall through. Check the general condition of the rig. Has it any faults at all? Ask about

SURVEY OF TRANSCEIVERS IN HAMADS OCTOBER 1979 - OCTOBER 1980

Brand	Model	Average Price $	Lowest Price $	First Year Advertised	Power Input Watts PEP	Bands
Yaesu	FT200	360	270	1969	300	5
,,	FT100	375	375	1967	120	5
,,	FT101	475	450	1970	260	7½
,,	FT101B	528	475	1973	300	7½
,,	FT101E	654	550	1975	260	7½
,,	FR/FL400	513	500	1968	300	5½ +
,,	FT400	390	250	1968	500	5½ +
,,	FTDX401	525	450	1971	560	5½ +
,,	FTDX560	437	400	—	560	5½ +
,,	FT7	397	350	1978	30	5
,,	FT7B	520	520	1979	100	5
,,	FT75	295	295	1972	50	5
,,	FT75B	413	375	1974	120	5
,,	FT201	400	400	1974	260	5
Kenwood	TS520	540	450	1974	200	5
,,	TS520D	500	500	—	—	5
,,	TS520S	603	550	1977	200	6
,,	TS120V	557	460	1978	30	5½
Uniden	2020	562	450	1975	180	6½
Galaxy	III	282	215	1964	300	3
,,	V	352	280	1965	300	5
Heathkit	SB100	300	300	—	180(?)	5(?)
,,	SB101	600	550	1972(?)	180	5
,,	SB301/401	600	600	1972(?)	180	5
Drake	TR4C	669	550	1975(?)	300	5
Swan	350	350	350	1964	400	5
,,	500	383	350	1967	400	5
Atlas	215	562	475	1975	200	5 (no 10m)

NOTES

1. Brands appear in order of total number of sets advertised.
2. Models and brands with an average price over $600 have been excluded.
3. The dates in the fifth column are indicative of the first year of sale in Australia only.
4. The data in the last two columns should be taken as a guide and may not be truly descriptive of a particular set. E.g. later versions of the Galaxy V had rated inputs of 500W PEP.

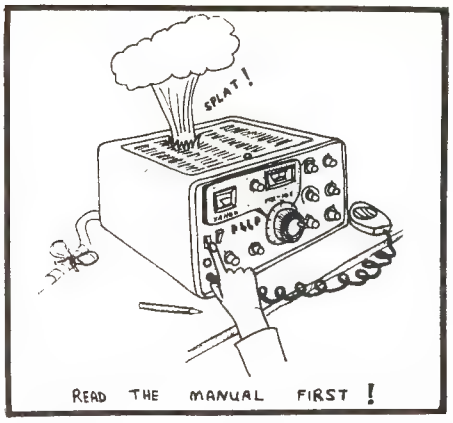
the specification and general description: frequency coverage, power, modes, sensitivity, selectivity, stability, cross-modulation, image rejection, power supplies and accessories are all important. Decide whether you are really interested and if possible arrange a demonstration. If the seller is out of town then perhaps he can come up on a test schedule for you. If all is well find out who pays freight and insurance. Is the price firm? It usually is unless "ONO" is stated. A reduction between $10 and 10 per cent of the price could be expected if this is so, particularly if the set has been on the market for some time.

If the set needs repairs that you cannot handle remember that service charges are around $20 per hour and, when parts are added, a bill of $100 can be run up for anything other than straightforward repairs. Servicing shops sometimes insist on replacing all aged valves before giving a guarantee on their work.

Be wary of buying a rig that has been "improved" by the owner. Establish his competence and inspect the workmanship. Some early rigs did need modification and most have been well done but I have seen some dreadful acts of butchery performed in the name of modification or even repair.

AN IMPORTANT STEP

When you get your bargain at home sit down and read the handbook before doing anything else. This will tell you how to test the set and help you to get it on air with a minimum of trauma.



CLEANING UP

Many old rigs are dirty and look a bit battle-scarred. A run over with a vacuum cleaner followed by a wash in hot soapy water with a paint brush and toothbrush will remove the grime from inside and around the chassis. Dry the set with a hair dryer. Wax deposits on the chassis can be removed with a piece of wooden dowell sharpened to a chisel shape. Make sure the rig has dried thoroughly before applying power. Lubricate the dial mechanism with a little grease and a small drop of oil.

The case should be scrubbed up too. A fresh paint job using a pressure-pack can of automotive paint will work wonders. The front panel could be given the treatment as well but will involve removing or covering the dial, S-meter, etc. If the front panel lettering is not engraved it might be as well to be satisfied with a good wash.

Some of these rigs have noticeable VFO drift in the first hour, particularly in the first 15 minutes. You could develop the habit of spending the first 15 minutes in the shack tuning around so as to avoid drifting off your QSO frequency. It is a good habit to acquire anyway, as it allows you to gauge band conditions and see who is about.

In closing I would like to remind you, the reader, that I want to see your contributions for this column. ■

CHANGE OF ADDRESS

*

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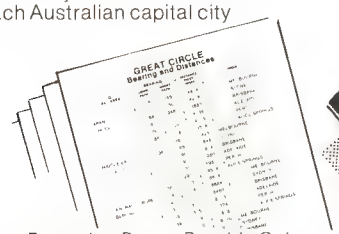

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50.055	ZL1UHF	Auckland
50.100	KH6EQI	Pearl Harbour
50.105	KC4AAD	McMurdo, Antarctica
50.110	KH0AB	Saipan
50.144	KC6NI	Ponape, Caroline Is.
51.999	YJ8PV	Vanuata
52.150	VK5KK	Arthurton *
52.200	VK8VF	Darwin
52.250	ZL2VHM	Palmerston North
52.300	VK6RTV	Perth
52.330	VK3RGG	Geelong
52.350	VK6RTU	Kalgoorlie
52.400	VK7RNT	Launceston
52.435	VK3RWV	Hamilton *
52.440	VK4RTL	Townsville
52.450	VK2WI	Sydney
52.500	JA2IGY	Mie
52.500	ZL2VHM	Palmerston North
52.510	ZL2MHF	Mt. Climie
52.800	VK6RTW	Albany
52.900	VK6RTT	Carnarvon
53.000	VK5VF	Mt. Lofty
144.010	VK2WI	Sydney
144.162	VK3RGI	Gippsland
144.400	VK4RTT	Mt. Mowbullan
144.475	VK1RTA	Canberra
144.500	VK6RTW	Albany
144.600	VK6RTT	Carnarvon
144.700	VK3RTG	Vermont
144.800	VK5VF	Mt. Lofty
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.400	VK4RBB	Brisbane
432.450	VK3RMB	Mt. Bunningyong *
10.3 GHz	VK6RVF	Perth *

* Denotes new listing.

In what must be quite a spate of new beacon activity we have four new beacons added to the list this month. Firstly, David VK5KK advises he has received official approval to operate his beacon on a 24 hours basis on 52.150 MHz. It runs 14 watts to a 6 element beam pointing generally north-east and will be on continually except for when David is actually operating on 6 metres himself. Reports of reception would be appreciated to **PO Box 3, Arthurton, SA 5572.** By the way, Arthurton is on Yorke Peninsula, north of Maitland.

The next beacon to mention is VK3RWV being operated by Steve VK3OT from Hamilton, and is presently running on 52.435 MHz with 25 watts to an antenna consisting of four dipoles. Steve would also welcome reports. In addition, Steve hopes to have another beacon on 432.435 MHz running before Christmas 1980. This will be a welcome addition to the band.

The third beacon has been confirmed as being in operation by a letter from Dick Forrester VK3VU, President of the Ballarat Amateur Radio Club, who advises the beacon is now fully operational, on 432.450 MHz, with a power of 10 watts into a pair of crossed dipoles situated on the top of Mt. Bunningyong about 8 km south-east of Ballarat. Reception reports to **Box 600, Ballarat, Victoria 3350.**

Advice of the fourth beacon is contained in the pages of "The Western Australian VHF Group Bulletin" and reads as follows:

A permit has been issued by the P. and T. Department to the VHF Group for the operation of an X Band beacon in the 3 cm Amateur Band, the call sign being VK6RVF.

The unit was installed on Saturday, 6th September, by Will VK6UU, Trevor VK6ZCB, Roger VK6NR and Colin VK6CM. It is located on the top of the existing tower holding the Channel 2 repeater, at 250 feet.

The beacon was built by Colin VK6CM, and consists of a free running temperature compensated Gunn diode oscillator with an output power of 15 mW feeding into a 17 dB Horn antenna giving an ERP of approximately 1 watt. Frequency of operation is 10.3 GHz. The

Gunn oscillator consists of a varactor tuned cavity, frequency control and audio ident being supplied to the varactor. Identification approximately every 20 seconds with no key down period.

It is intended to illuminate the Perth Metropolitan Basin and is being received with fair signal strength from rockingham to Nedlands, whilst Colin is working at present on a new antenna designed to give improved coverage.

Only two known transceivers are currently in operation, but more are expected as the beacon becomes more widely known. The last time tests were carried out cross country, a distance of 32 km with a signal strength of 5/9+ in both directions was achieved, which incidentally constitutes a state record, however Roger and Colin will wait until this is extended before applying for recognition.

Further information on the beacon can be obtained by telephoning Colin during business hours on 380 3193.

It's good to see beacons being established on bands other than the most populated, and the 3 cm beacon in the west now joins the one which has been in use on that band in New Zealand for some time, on 10.37 GHz. Being 70 MHz apart it is unlikely they will interfere with one another!

I note also work is progressing on the 2 metre beacon being constructed by the South East Radio Group on Mt. Gambier, SA. The identifier and control logic board is now complete and working. The SERG Newsletter advises negotiations for the proposed site are now complete and the beacon will be located on private property adjacent to the main Nelson Road and approximately 20 km from Mt. Gambier.

Reports are also to hand of the possibility of a VK9ZG beacon from Willis Island on 52 MHz, and moves are afoot to try and do something about a beacon for the Antarctic regions in 1981. More on this later.

CHANNEL 0

Well, it has happened. Channel 0 in Melbourne is in full swing again with Ethnic Television. Several of my spies in the Melbourne area telephoned to say the thing had started up again on 13-10, with the sound carrier this time being centred on 51.791 MHz, and putting more "crud" on the 52 MHz amateur band than had ever been received before on the old Channel 0. It seems the transmissions are designed primarily for the Melbourne area only, and is operating simultaneously with Channel 28 on UHF. From reports so far received it seems the potential for causing interference with the present set-up will be greater than previously because of the lower power being used by the transmitter, thus allowing 6 metre operators to affect a greater number of TV receivers due to less control by the receiver AGC system.

If the operating hours remain as I was originally informed, about 5 to 7 hours a day ending about 11 p.m. local at night, this will make it very difficult for the Melbourne boys to participate in any of the afternoon type TEP which may occur from time to time, and arrives around 5 p.m. local, and earlier contacts may also be out of the question if the things runs test patterns for hours. I wonder how Sydney is faring, and how long before the other States will be hammered into submission by an escalation of Channel 0 transmitters?

"Look here what the storm has brought me: 1 quad, 2 Yagis, six over six . . ."

from QST October 1979.

EQUINOX AND SIX METRES

A few things happened during the September/October equinox. Most have never been reported to me, but as one unable to listen much on 28885 for a variety of reasons, they will go on being unreported for the time being. However, from the VK5 angle anyway, it is noted in information from Gerry VK5AGM at 10-10 produced JR7 and 15 JA8s between 0220 and 0300Z. On 13-10 0320Z VK6WD and VK6BV. 14-10 13 JAs in areas 1, 2, 3, 4 and 5 between 1310 and 1400Z. 16-10 0240Z five JA7/8. 21-10 50 MHz JA at night.

One of the better openings was probably that on 24-10 in which I shared and worked 30 JAs in areas 1, 2, 3, 4, 6 and 9, between 1209 and 1317Z, with signals mainly 5 x 9.

Peter VK5ZPW from his prime location at Angaston was fortunate to work the DXpedition C21NI at Nauru on 14-9 at 2320Z on 6 metres, also C21NI believed to have worked some VK2s and ZLs. Apparently Peter heard the Nauru station for 3 minutes at 5 x 9! And that was it.

Gerry VK5AGM has been making good use of CW to work JAs and on 11-9 worked 5 around 1005Z at S1. JAs also noted into VK6 on 10-9. Gerry also reports W6 were hearing ZL TV on 27-9. Also HL9WI is now W6HTH/KH6 and working a number of stations in the Pacific areas.

Broken Hill has been showing some interest in 6 metres, and Peter VK5ZPW worked to there on 52.050 on 5-9 and 27-9 to VK2ZI.

KH6IAA heard and worked in Adelaide on 24-10 around 1000Z prior to the large JA opening.

John VK5ZBU has written advising of a letter from Art WA1EXN in Maine, USA, with the following information:

Art is setting up a part-time beacon on our part of the 6 metre band, on 52.090 to be precise, his operating times being 1000 to 1200Z and 2200 to 2400Z. Power 100 watts to 11 element beam, with 600 watts in reserve if required! Both Arthur and Andy, his foster son, who is VE1ASJ and the operator of the VE1SIX beacon, will be on the alert for any openings.

Art operates mainly 6 metres these days, and worked many VKs back in 1948 as J5AAW. He often worked 8P6EN, who was of course our old pal Alan VK5IR when Alan was in Barbados some years ago, also on 6 metres. So now you, the multitudes, know there is someone interested in working you from Maine, perhaps there will be another peak for you to do it!

Thanks, John.

ON THE OCEAN WITH TWO METRES

Eric Trebilcock L3-0042/BERS-195 has sent me a letter he received from the Amateur Radio Association of Bahrain in the Arabian Gulf, from which I have taken the relevant extracts as some VK amateurs do actually sail the seas in ships and might be carrying 2 metre equipment with them!

The Chairman and Repeater Keeper advises:

"We would like to draw your attention to the fact that we have a VHF Repeater operating on Channel R6 145.750 Tx-145.150 Rx accessed by the normal 1750 c/s tone burst. The aerial height is 220 feet a.s.l. running 20 watts output for 3 microvolts sensitivity through a single 5 dB collinear aerial.

Operation and coverage have been excellent over the last year since initial installation and amateurs sailing on vessels in the Gulf have been working over a distance of 300 miles.

We would welcome any new users to the repeater as currently there are only the following licence members active on the system: A9XBW, A9XCF, A9XCX and myself A9XBE. Yours faithfully, S. K. STREET, PO Box 22381, MUHARRAQ, BAHRAIN, ARABIAN GULF.

So go to it you intrepid travellers!

TWO METRES

Peter VK5ZPW has been successful working Broken Hill on 2 metres as well, when he contacted VK2ZI, VK2BY and VK2ADJ using both FM and SSB. Peter also advises the Broken Hill boys have 432 MHz capability so looks as though we will have to do something about that band soon.

Noted also on 16-10 that Kevin VK7ZAH was working to VK3YNB, VK3YUZ and

others. on 21-10 Steve VK3OT worked here on both six and two metres, but signals were several S points stronger on 6 than 2 at 0015Z. But earlier than that Steve reported the VK5VF beacon on 2 metres had been very strong, and signals from Adelaide area were better than when I got in on the act. On 20-10 VK5ZEM to VK3BHS both on SSB and FM.

Can anyone confirm the report received that a Melbourne FM station (commercial), 3FOX, had been heard in Argentina during October? No other details are available at this time.

Whilst conditions may not have been over-bright for 2 metres on the Australian scene, it seems the operators in the United Kingdom have been having a ball, as outlined in some information sent to me by Steve VK5AIM, and taken from Short Wave Magazine. They have had several Es openings, plus auroral, and they made good use of the Perseids meteor showers.

They had good openings across to Sweden on 11-7, which is in the middle of the northern hemisphere summer, followed by openings to Italy and Spain and Malta, from 1715 to 1745Z, followed after 1800Z with stations in C3, CT, etc.

As an indication of what interest can be engendered when you are surrounded by other countries rather than the isolation which exists in VK, it is noted that the top scoring station in the three band annual VHF table is G4CMV, who has worked 28 countries on 2 metres, G4IGO 24 countries, G3BW 23 countries. So despite their lack of 50 MHz in Europe it looks as if they have a lot of fun on the international 2 metre band.

CONTESTS

You may have this issue in time to remind you of the VHF Field Weekend being sponsored by the Geelong Amateur Radio Club, using the rules of the Ross Hull Memorial Contest as a basis for operation, and being conducted over the weekend of 6th and 7th December. This weekend also coincides with a similar VHF Field Weekend in New Zealand.

The Ross Hull Memorial Contest will be conducted from 6th December to 11th January, 1981. For some years now very few people have sent in any logs; why not give further support to this worthwhile contest and submit a log, the Contest Manager will accept photocopies of your log providing they are neat.

LOCATOR SYSTEM

I have not received one letter either in support of or against the suggested QTH Locator System recently published in this column. **Am I to conclude we have no objections, and advise the originators in London to include us in their thinking for the future?** If you have anything worthwhile to say on the matter I would be pleased to hear from you. I do have to send a letter to London in time for their Conference in 1981.

TECHNICAL TIP

It is not so much a technical tip this month as an "appearance tip". When you are constructing a piece of equipment of which you will no doubt be justly proud, why not spend a little extra time and ensure all the slots of the front panel screws in particular, but all external screws in general, have their slots pointing in the same direction? It only requires a thought at the time, and perhaps a little extra, or less, pressure with the screwdriver to ensure the slot is the same in each case. I find the slots look best horizontal, but that may only be me.

The second item concerns the use of Dymo or similar labelling tape which is often used to label the controls and meters of your finished equipment. To avoid having that very stuck on look, try to use tape with a background colour the same as that of the panel, i.e. if your panel is black then use black tape, if grey use grey tape, and so on. The white printing in each case will stand out quite well, but the background will not be readily noticed, and it makes for a much neater finished job.

CLOSURE

Generally speaking a bit poor for the equinoxial period, but a few highlights as mentioned in the column. With the summer Es season now coming up, let's hope for some excitement somewhere!

Best wishes for Christmas and a happy New Year to all my readers as this issue commences the 12th year of my association with the column. Thank you also to my many contributors, and for the support of the editor and editorial staff.

Closing with the thought for the month: "The average man has five senses. The successful man has six — touch, taste, sight, smell, hearing — and common."

73. The Voice in the Hills. ■

REPEATER NEWS

The following information has been supplied by Peter Mill VK3ZPP, reference 70 cm repeaters in Victoria.

REPEATERS ALLOCATED IN VICTORIA

438.225	VK3ROU Mt. Dandenong, Melbourne.
438.375	Reserved Ballarat Area.
438.525	VK3RAD Melbourne Suburbs. VK3RNU Mt. Stanley.
438.675	VK3RMU Melbourne Suburbs. (Reserved Hamilton, Western Victoria).
438.625	Vic. Division WICEN Group.
439.275	VK3RCU Mt. Macedon, Melbourne.

The Eastern Zone have requested an allocation but as yet have not confirmed one of the options presented to them. ■

INTERNATIONAL NEWS

In a letter from Mr. Shozo Hara, JA1AN, President of JARL, he advised that by invitation three Chinese members from the Association of Radio Sport in Peking arrived in Japan for a week's visit from 20th August and attended the JARL Ham Festival, which attracted 3,400 visitors.

JARL presented the Association with more than 10 sets of various items of equipment to assist with the commencement of amateur activity in China.

Incidentally JARL reports that a station BY1PK on air 19th October was not legitimate. Close liaison exists between JARL and the Chinese Association. The latter are anxious to commence amateur operations in China at the earliest possible date.

Photographs are reproduced here for interest.

Mr. Wong Xun (Asst. Sec.-Gen. ARS) in Peking, JA1AN, Mr. Cheng Ping (Sec.-Gen.), SM6CPI, interpreter.

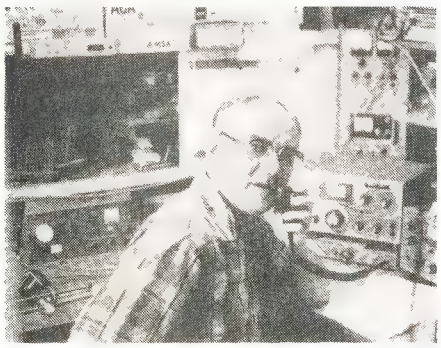
Left to right, seated: JA1AN, Mr. Cheng Ping. Standing, foreground: Mr. Takagi of Yaesu JH3ND, Mr. Wong Xun, Mr. Yu Zai Qin, Mr. T. Saiko JA1AA, Sec.-Gen. of JARL.

It is reported from other sources that donations of amateur gear have been made to at least two societies in independent nations in the Pacific area. ■

INTRUDER WATCH

DURING DAYLIGHT SAVING TIME THE INTRUDER WATCH NET ON 3540 kHz WILL OPERATE FROM 8.30 p.m. E.A.S.T. PLEASE JOIN

AMATEUR SATELLITES



R. C. Arnold VK3ZBB

Many thanks to Charlie VK3ACR for continuing the satellite notes during my absence overseas.

As Charlie mentioned, the newly-elected Directors of AMSAT include Pat Gowen G3IOR and Harry Yoneda JA1ANG, and it is encouraging for us to have two international directors who can express the views of amateurs outside the USA and Canada. I think we can take it that Harry is "our Director", as we have frequent contact with him via the AMSAT Pacific net which is held each Sunday at 1100 UTC on 14.275 MHz. If you are interested in joining this net, Harry will be looking for VK and ZL stations from around ten minutes before the above time. Harry is also active on frequencies between 28.877 and 28.880 MHz at 2200-2300 UTC on Fridays and Saturdays and between 0900 and 0930 UTC on Saturdays and Sundays.

Since I returned I have noted several new call signs operating through the satellites and to them I would say that AMSAT would welcome you as a member. By doing so you would assist our cause and help defray the cost of future satellites. Annual membership of $US20.00 or Life Membership of $US200.00 can be sent to AMSAT at PO Box 27, Washington, DC 20044, USA.

Whilst speaking about activities in the USA, I would also mention membership of Mode J Club, which is available to any amateur who has worked at least eight stations on Mode J of OSCAR 8. No QSL needs to be submitted, just send a list of stations worked to Larry Roberts W9NXC, 3300 Fernwood, Alton, Illinois, 62002, USA. Membership is $US3.00, but if you require your Newsletter delivered airmail I suggest an additional $US1.00 per month would be appropriate.

Both OSCARS 7 and 8 have been working satisfactorily although AO7 has been mode slipping from time to time; it is therefore necessary to listen every night to find out which mode the satellite is on.

Harry sends the following report: "I have been reading AO7's telemetry a great deal recently, and have been highly impressed with its 'good health' long beyond its 'lifetime' Among the bank of nicad cells that are connected in series to make up the approx. 14 volt battery, some appear to have 'shorted' themselves out, and at least one cell has 'opened' up. Well, thanks to this open (or near open nicad) cell, the 'bird' can function — as long as the solar panels can create electric power. **If and when** this open cell shorts itself out, then we're in great trouble. AO7 then will cease to operate. So, please use AO7 with care — which means do not use excessive uplink power, and 'read' the telemetry from time to time, and when you find that the 'bird' is suffering from lack of power, please refrain from using it for general QSOs. To those who don't like copying CW, here's a hint. Listen to the very last telemetry channel just before the two 'HIs' come. If the last channel (it is called channel '6D') says 650 or 651 then AO7 is doing okay and you can use it for general QSOs. If '6D' reads other than 650 or 651 you'de better wait and see. Recent readings tell me that when '6D' is 651, then the bus-voltage is approx. 13.3 volts. However, whenever the bus-voltage drops close to 10 volts, then the 650 or 651 goes 'haywire' and eventually the entire telemetry readings go haywire too (starts to send meaningless figures). Telemetry copying is a lot of fun, so do it and I'm sure you'll get interested more and more, with a much deeper understanding of what it's all about. You can 'feel' the spin of the satellite, you can know what temperature the battery is at, how many watts the transponder or beacon (435 MHz beacon) is delivering and much more info can be collected and later analyzed. Incidentally, when AO7 is in mode A, the 435.1 MHz beacon can be heard on most orbits (passes). It is in FSK (F_1) using Morse most of the time."

For the time being, OSCAR 8 is shut off on each Wednesday in order to recharge its batteries, although it may be on occasionally to provide selected amateurs with facilities for experimentation.

The following information from W6XN gives the orbital parameters for December 1980:—

AO7:

$T = 114.94732 - 1.806 \times 10^{-7} \times N$ (min/orbit)

$I = 28.7373$ (degrees)

AO8:

$T = 103.22483 - 1.711 \times 10^{-6} \times N$ (min/orbit)

$I = 25.809827 - 5.8 \times 10^{67} \times N$ (degrees)

T = orbital period; I = angular increment; N = orbit number.

On this topic I received a most interesting letter from Ian VK2YIY who, with great mathematical precision, has been determining the orbital period for OSCAR 8. He tells me that on orbit 13207 the orbital period was 103.2020 minutes, which I believe agrees with the above data. Ian advises that a recent burst of solar activity has again varied the orbital time and he is pursuing his calculations with a view to obtaining even greater accuracy.

These reported changes make long-term prediction of satellite appearances difficult and I suggest that each State Liaison Station provides its weekly broadcast with times of acquisition for each capital city. This will enable newcomers to find a satellite with reasonable accuracy. I would particularly thank Andy VK3YQX for his contribution in this regard and to other State Liaison Stations which provide like information.

I was sorry to hear that Frank VK2ZI in Broken Hill has been off the air due to technical difficulties, and we look forward to seeing Frank again when repairs have been effected. Frank epitomises the amateur spirit, as although he is blind, he still manages to make perfect QSOs via the satellites.

At a recent Congress organised by the Australian Computers' Society, a paper was presented by Stuart King ZK1AA on the matter of satellites communications in developing countries. Stuart quotes the AMSAT satellites service as a relatively cheap way of communication via satellites on VHF frequencies, and for those who are able to obtain a copy of his paper I commend it as good reading. I hope we may be able to obtain permission to reprint this paper in "Amateur Radio" in due course. ■

AT LAST!

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Awards Column

Bill Verrall VK5WV
7 Lilac Ave., Flinders Park, S.A. 5025

In my first annual report back in February 1980, I commented that I was disappointed by an apparent lack of interest in the VHF awards available from the WIA.

I am still not receiving enough applications for these awards. Therefore, the rules are published herein with the hope that this will stir some action into our VHFers during the current DX season.

Both these awards require some consistent effort to qualify and this should now be easier than it was during the old AM days in the early 60s when I obtained both awards. The technology now available to VHFers is far superior to the pair of 807s with 120 watts input on AM I used to run! However, that was a lot of fun as we replaced our 807s at two or three monthly intervals when they became too tired to put out enough steam on 6 metres. Does anyone remember the "Mustard Pot", where we could purchase new 807s in dozen lots at five shillings each?

Perhaps some operators are discouraged by the requirement to obtain QSL cards. Whilst most of us do not bother to QSL contacts with other VKs, I will always QSL direct or via the bureou if requested, particularly if my card is required for an award. So let me see a few more applications for our own WIA awards next year!

DESCRIPTION

Both awards are printed in two colours on high quality paper with motif and surround in maroon and printing in black. The WAS measures 245 mm x 180 mm and the VHFCC 155 mm x 205 mm.

I wish all readers my best compliments of the season and good luck in your wallpaper collecting during 1981.

WORKED ALL STATES (AUSTRALIA) AWARD

Rules as amended 1.1.79.

OBJECTS

1.1 This Award has been created in order to stimulate interest in the VHF/UHF bands and is of a high standard to fully acclaim the proficiency of the recipients on their achievements.

1.2 This Award, to be known as the "Worked All States (Australia) Award", will be issued to any amateur in Australia or overseas who satisfies the conditions following.

1.3 A certificate of the Award will be issued to applicants who show proof of having made two-way contact with the specified areas of the Commonwealth of Australia. Additional credit will be given for proof of contact with overseas countries, viz., New Zealand or Papua New Guinea. Countries, for the purpose of this Award, are set out in the Australian DXCC Countries List.

REQUIREMENTS

2.1 Contacts must be made on the VHF/UHF bands 52 MHz and above (Bands 8 and 9). Contacts made on 50-52 MHz prior to 1/4/64 will count towards the 52 MHz Certificate.

2.2 One verification from each of the following areas of the Commonwealth of Australia is required —
(a) Australian Capital Territory.
(b) New South Wales.
(c) Victoria.
(d) Queensland.
(e) South Australia.
(f) Western Australia.
(g) Tasmania.
(h) Northern Territory.
In all, eight verifications are required.

2.3 It is possible under these rules for one applicant to receive one Award for each of the authorised bands between 30 and 3,000 MHz.

OPERATION

3.1 All contacts must be two-way contacts on the same band and crossband contacts will not be allowed.

3.2 Contacts may be made using any authorised type of emission for the band concerned.

3.3 Portable operation will be permitted provided that the portable location shall be in the State in which the licence was granted and in the call area in which the licence was granted in the case of overseas operation.

3.4 All contacts must be made in accordance with the Regulations laid down in the "Handbook for Operators of Radio Stations in the Amateur Service" or its successor for Australian stations, or in accordance with those Regulations applying in the country of the applicant in the case of overseas stations.

VERIFICATIONS

4.1 It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence showing that two-way contacts have taken place.

4.2 Each verification submitted must be exactly as received from the station contacted, and altered or forged verifications will lead to the disqualification of the applicant.

4.3 Each verification submitted must show the call sign of the station, date and time of contact, type of emission and frequency band used, the report and the location or address of the station at the time of contact.

4.4 A check list must accompany every application setting out the details for each claimed station in accordance with Rule 4.3. If any contacts were made whilst portable, this must be stated and the portable location given. The applicant must also state whether or not they are a member of the WIA.

4.5 In lieu of forwading QSL cards or other written evidence as set out in Rules 4.1 to 4.4 above, a list giving the details set out in Rule 4.3, certified by the Awards Manager, Secretary or Council Member of an affiliated Society, or two licensed amateurs known to the applicant, should accompany each application.

APPLICATIONS

5.1 Applications for membership shall be addressed to the Federal Awards Manager of the WIA accompanied by the verifications and check list with sufficient postage enclosed for their return to the applicant, registration being included if desired.

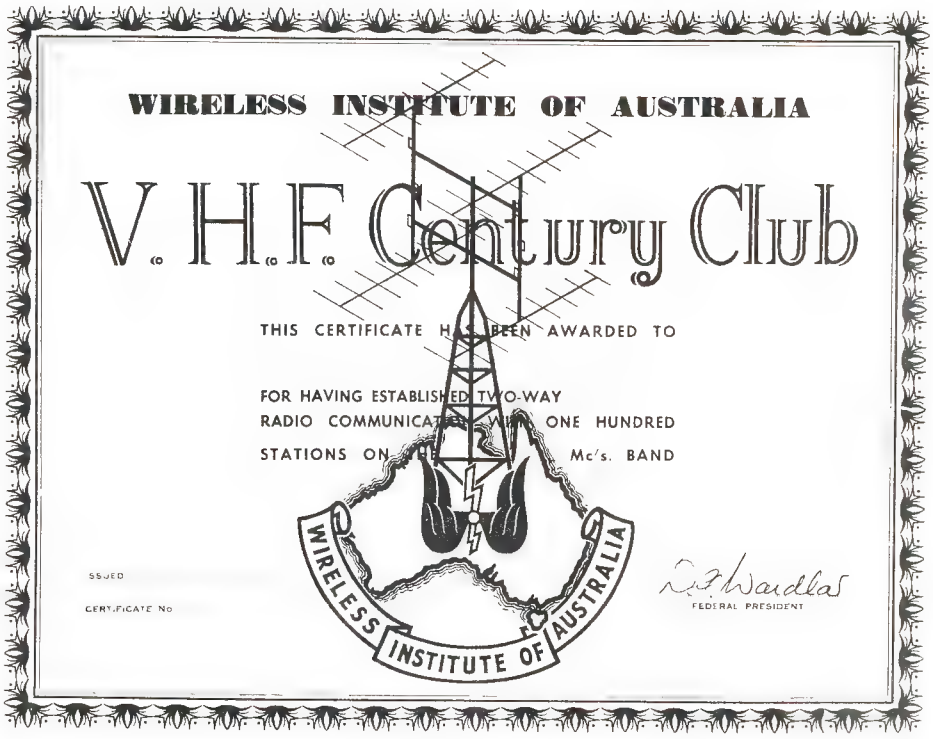
5.2 A nominal charge of $1, which shall also be forwarded with the application, will be made for the issue of the certificate to successful applicants who are non-members.

5.3 Successful applicants will be listed periodically in "Amateur Radio". Members wishing to have their verified country totals listed over and above those submitted at the time of application for membership, will notify these details, in writing, to the Federal Awards Manager.

5.4 In all cases of dispute, the decision of the Federal Awards Manager and two officers of the Federal Executive WIA in the interpretation and application of these Rules shall be final and binding.

5.5 Notwithstanding anything to the contrary in these Rules, the Federal Council of the WIA reserves the right to amend them when necessary. ■

☆ ★ ☆



AUSTRALIAN VHF CENTURY CLUB AWARD

Rules as amended 1.1.79.

OBJECTS

1.1 This Award has been created in order to stimulate interest in the VHF bands in Australia, and to give successful applicants some tangible recognition of their achievements.

1.2 This Award, to be known as the "VHF Century Club Award", will be issued to any Australian Amateur who satisfies the following conditions.

1.3 Certificate of the Award will be issued to the applicants who show proof of having made one hundred contacts on the VHF bands, and will be endorsed as necessary for contacts made using only one type of emission.

REQUIREMENTS

2.1 Contacts must be made in the VHF Band (Band 8) which extends from 30 to 300 MHz, but such contacts must only be made in the authorised Amateur Bands in Band 8.

2.2 In the case of the authorised bands between 30 and 100 MHz, verifications are required from one hundred different stations, at least seventy of which must be Australian. The Amateur Bands 50 to 54 MHz and 56 to 60 MHz will be counted as one band for the purposes of the Award.

2.3 In the case of the authorised Amateur Band between 100 and 200 MHz, verification from one hundred different stations are required.

2.4 It is possible under these rules for one applicant to receive two certificates, one for each of the authorised Amateur Bands nominated in Rules 2.2 and 2.3.

2.5 The commencing date fo rthe Award is 1st June, 1948. All contacts made on or after this date may be included.

OPERATION

3.1 All contacts must be two-way contacts on the same band, and crossband contacts will not be allowed.

3.2 Contacts may be made using any authorise type of emission for the band concerned.

3.3 Fixed stations may contact portable/mobile stations and vice versa, but portable/mobile station applicants must make their contacts from within the same call area.

3.4 Applicants, when operating either portable/mobile or fixed, may contact the same station licensee, but may not include both contacts for the same type of endorsement.

3.5 Applicants may only count one contact for a station worked as a limited licensee with a Z or Y call sign who is subsequently contacted as a full AOCP holder.

3.6 All stations must be contacted from the same call area by the applicant (except as below), although if the applicant's call sign is subsequently changed, contacts will be allowed under the same call area.

If the applicant moves to another call area, contacts must be made from within a radius of 150 miles of the previous location to qualify for award purposes. If the distance of the new location from the old exceeds a radius of 150 miles, a separate application for a new award must be made claiming only contacts made from the new location.

3.7 All contacts must be made when operating in accordance with the Regulations laid down in the "Handbook for the Guidance of Operators of Amateur Wireless Stations" or its successor.

VERIFICATIONS

4.1 It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence showing that two-way contacts have taken place.

4.2 Each verification submitted must be exactly as received from the station contacted, and altered or forged verifications will be grounds for disqualification of the applicant.

4.3 Each verification submitted must show the call sign of the station worked, the date and time of contact, type of emission and frequency band used, the report and the location or address of the stations at the time of contact.

4.4 A check list must accompany every application setting out the following details:

4.4.1 Applicant's name and call sign, and whether a member of the WIA or not.

4.4.2 Band for which application is made, and whether special endorsement is involved.

4.4.3 Where applicable, the date of change of call sign and previous call sign.

4.4.4 Details of each contact as required by Rule 4.3.

4.4.5 The applicant's location at the time of each contact if portable/mobile operation is involved.

4.4.6 Any relevant details of any contact about which some doubt might exist.

4.5 In lieu of forwarding QSL cards or other written evidence as set out in Rules 4.1 to 4.4 above, a list giving the details set out in Rule 4.3, certified by the Awards Manager, Secretary or Council Member of a Division of the Wireless Institute of Australia, or two licensed amateurs known to the applicant, should accompany each application for membership or adjustment of verified country totals.

APPLICATIONS

5.1 Applications for membership shall be addressed to the Federal Awards Manager of the Wireless Institute of Australia, accompanied by the verifications and check list with sufficient postage enclosed for their return to the applicant, registration being included if desired.

5.2 A nominal charge of $1, which shall also be forwarded with the application, will be made for the issue of the certificate to successful applicants who are non-members of the Wireless Institute of Australia.

5.3 Successful applicants will be listed periodically in "Amateur Radio". Members of the VHFCC wishing to have their verified totals, over and above the one hundred necessary for membership, listed will notify these totals to the Federal Awards Manager.

5.4 In all cases of dispute, the decision of the Federal Awards Manager and two officers of the Federal Executive of the WIA in the interpretation and application of these Rules shall be final and binding.

5.5 Notwithstanding anything to the contrary in these Rules, the Federal Council of the WIA reserves the right to amend them when necessary. ■

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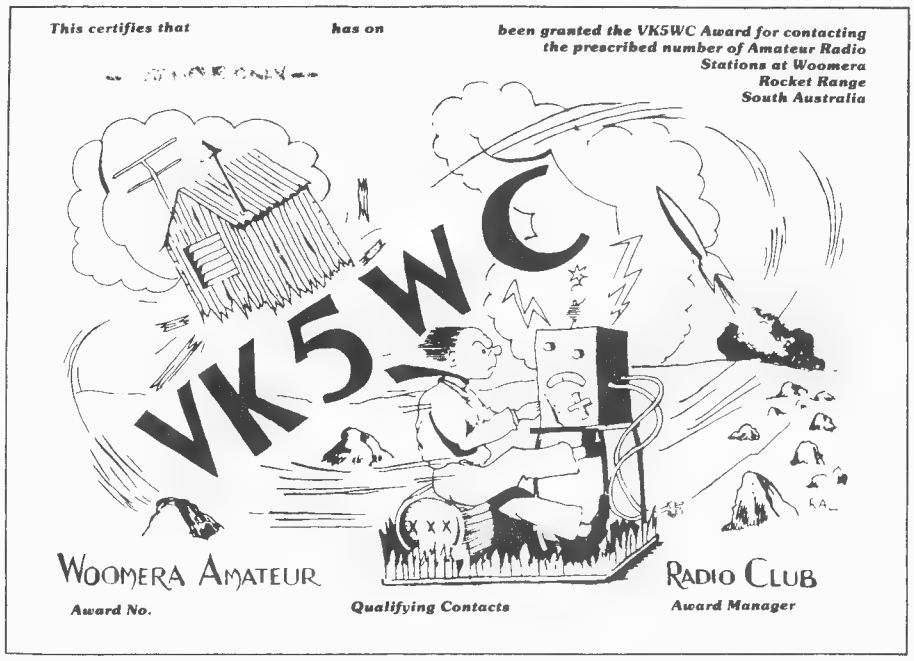
WOOMERA AMATEUR RADIO CLUB THE VK5 WHISKY CHARLIE (VK5WC) AWARD

1. The title will be the "VK5WC" Award in commemoration of the 25 years the club has been in existence, the first 23½ of which VK5WC was the only call sign authorised to be used within the community.
2. The design of the Award will be similar to the unusual Club QSL card, printed in several colours on good quality white indestructible parchment.
3. The Award to be open to any licensed amateur radio station in the world, irrespective of class of licence held by the operator, after satisfying the conditions and the payment of the prescribed fee.
4. The conditions to be the satisfactory exchange of traffic with financial members of the club as described in paragraph 5. This is to be in the form of a certified log entry signed by the claimant and countersigned by two other licensed amateur radio operators, or in the case of an isolated claimant, by a justice of the peace or notary public. In case of dispute, local log entries at Woomera shall be accepted as proof conclusive of whether or not a contact took place.



5. The number of Woomera stations to be worked shall be:
   (a) **the Club station VK5WC** and **two** club members, **or**
   (b) **four** different Woomera stations.

Club members shall only qualify for the granting of the Award if when they are worked by a claimant they are within the Woomera community or a geographical area bounded by Anda-

mooka in the north-east, Wirrappa in the south-east, Wirraminna in the west and Roxby Downs in the north-west.

6. Any authorised frequency or band, including crossband and VHF, UHF or satellite repeater, and any mode or combination of modes for which the stations concerned are licensed are permissible. Contacts may be claimed retrospective to 3rd May, 1978, which is the date the use of individual call signs was authorised within the Woomera "village" community.

7. Claims for the Award are to be submitted in writing to the Award Manager, Woomera Amateur Radio Club, PO Box 538, Woomera, South Australia 5720, accompanied by $2.50 in Australian currency or equivalent, preferably by bank cheque payable to the Woomera Amateur Radio Club, Award Account.

GENERAL INFORMATION

It is hoped to produce a special version of this Award as a limited edition to celebrate the club's actual jubilee, and details will be advised later.

There will be many Australian and overseas amateurs who would have operated the club station during the last 25 years and we feel that some of them may wish to recall their association with us and have a jumbo size QSL card.

At present (October 1979) the following members are active on the HF bands: VK5OL (President), VK5MQ (Past President), VK5LA, VK5SZ, who will be departing in a couple of months, and VK5DQ (PRO/Award Manager). ■

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VK1 AWARD
NEW OPERATING AWARD

The WIA (ACT Division) Inc. has released details of its new amateur radio award, **"The VK1 Award".**

The Award, which has been sponsored by AW Designs Pty. Limited, one of Australia's leading printed circuit board designers, has the aim of increasing interest in the VK1 prefix, and in promoting Canberra and Australia internationally.

As there are only 300 VK1 licensees, the award will not be an easy one to achieve, particularly on some bands and modes.

The station which had the honour of achieving award certificate No. 1 was the Danish amateur Egil Bohn 0Z4BO, who is well known for, among other things, giving considerable assistance to Australian novice stations in contacting some of the rarer European DX stations.

Applications for the award should be forwarded to:

The Awards Manager,
Wireless Institute of Australia
(ACT Division),
P.O. Box 46,
Canberra, ACT 2600,
Australia.

Full details of the rules governing the award are as follows:

1. The VK1 Award is available to any licensed radio amateur who submits details of valid radio contacts with VK1 stations.
2. The number of contacts required is: On HF: 20 for VK station, 10 for others. On VHF: 10.
3. Contacts via terrestrial repeaters shall not be valid for this award.
4. Proof of contacts: a log extract is required, showing for each contact the GMT date and time, band, mode of emission, call sign worked and reports or ciphers exchanged.
5. Endorsements for specific bands and modes are available on request.
6. Contacts made from 1 January, 1978, are valid for this award.
7. Applications for the award shall include five IRCs or $A2.00 to cover costs. Certificates will be posted by ordinary mail.

THE WIRELESS INSTITUTE OF AUSTRALIA

A.C.T. DIVISION

founded by the Canberra Radio Society

This is to Certify that

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has completed the requirements for the

VK1 AWARD

CERTIFICATE NUMBER

DATE

ENDORSEMENTS

PRESIDENT

8. The award is also available to shortwave listeners, whose log extracts shall include the call sign of the station contacted by the VK1 station heard, and the report or cipher issued by the VK1 station. ■

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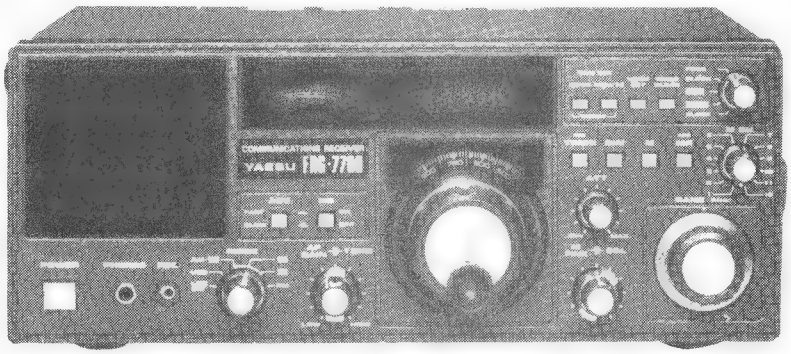

- **GENERAL COVERAGE**

The model FRG-7700 is a high-performance, all solid state, communications receiver designed to cover the low, medium and high-frequency spectrum from 0.15 MHz to 29.999 MHz.

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A unique feature of the FRG-7700 is its all mode capability — SSB (USB, LSB), CW, AM, and FM. The FM mode is especially useful when the FRG-7700 is teamed with a VHF converter.

- **DIGITAL FREQUENCY/TIME DISPLAY**

The FRG-7700 digital display unit allows you to display the operating frequency or time. Just turn a knob for selection of the desired function.

- **TWELVE MEMORY CHANNELS (OPTION) WITH BACKUP**

As many as twelve memory channels may be programmed for instant return to a favourite station. The memory unit stores the entire frequency, which means you never have to change the bandswitch when switching channels. A backup feature is provided to hold the memory circuits when the FRG-7700 is turned off.

- **LSI CLOCK TIMER**

If you want to record a program, but have to be away from your station, the FRG-7700 will do it for you. The built-in digital quartz clock contains a timing feature that activates the receiver and internal relay contacts. Set the time you want to start and stop recording, hook up your tape recorder, and your FRG-7700 will do the rest.

- **WIDE DYNAMIC RANGE**

The FRG-7700 is an up-conversion superheterodyne receiver, incorporating a 48 MHz first IF. The up-conversion technique and the individual filter networks in the front end eliminate most image problems, allowing you to receive weak signals. A high "IDSS" JFET balanced mixer is utilized in the FRG-7700 to provide wide dynamic range for protection from cross modulation.

- **CONVENIENCE FEATURES**

Selectable AGC, memory fine tuning, DIM switch for dimming the digital display, advanced noise blanker, and a variable RF attenuator provide the convenience you need for efficient operation. The front panel controls and switches are arranged in a logical manner, so you won't have to fumble for a knob when you need it quickly.

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RON FISHER
VK3OM

AN EXTRA MEMORY AND TRUE ANTI-REPEATER MODE FOR THE YAESU FT-227R

Several months ago we published in this column a popular modification for the FT-227R to provide reverse repeater operation. A recent letter from Ken Ray VK1ZKR tells of a new modification he has devised to provide for reverse repeater operation without the loss of the panel selected +600 kHz transmit facility. Ken also shows how to get one extra memory channel. Take your pick of the modifications, but Ken's approach is certainly a novel one. Over to you Ken.

The FT-227RB 2 metre rig has four memories, however, the fourth is only available as a transmit memory. This was intended to be used to provide a variable offset, as whenever this memory is selected this gives the transmit frequency, with the dial frequency being the receive frequency.

I found that this feature was of little use, and an extra "standard" memory would be much better. The modifications required to do this modification are quite simple, and require only three changes to the function switch S8. See diagram below, and a quick check with the complete circuit diagram would be useful to understand just what is happening.

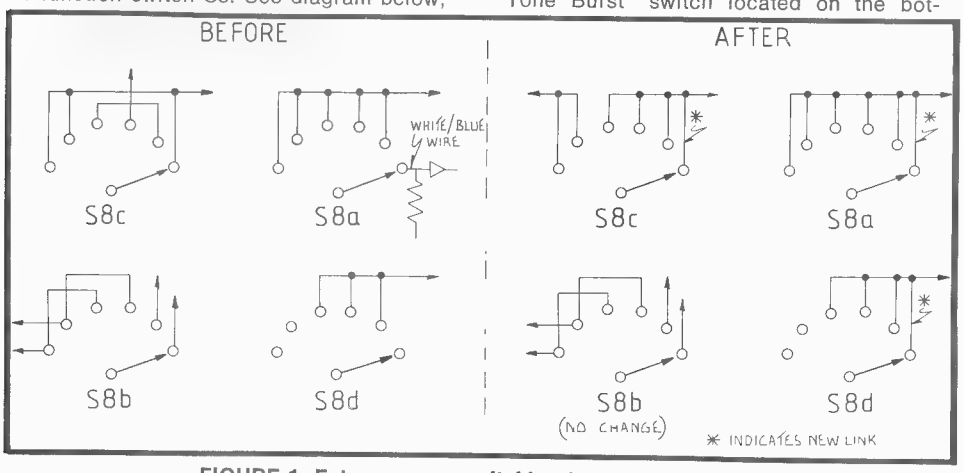

FIGURE 1: Extra memory switching for the FT-227R.

TRUE ANTI-REPEATER MODE FOR THE FT-227RB

There have been a number of articles written on how to "invert" the Yaesu FT-227RB 2 metre rig. However, most of the methods used require the dedication of one memory or the loss of some other features. The method shown here is very simple, and doesn't take away any of the existing facilities. To understand how the method works, some knowledge of the frequency generation process is needed.

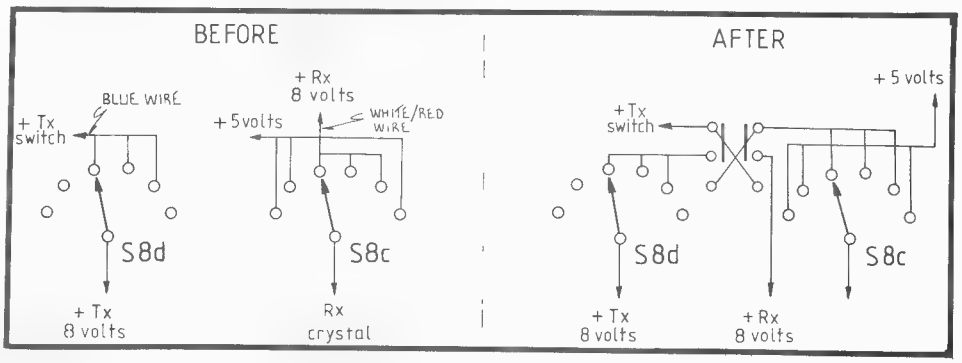

FIGURE 2: Modifying the FT-227R for anti-repeater operation.

The transmit offsets are determined by switching crystals in the heterodyne oscillator and there are six possible crystals that can be selected. These six crystals can be considered to be in two banks of three, the appropriate bank being selected by the "5 up" switch. Each set of three corresponds to the receive frequency and the two possible transmit frequencies, 600 kHz above and below this. Depending on the position of the "5 up" and "+Tx" switches, and whether transmitting or receiving, the correct crystal is selected.

Diode switching is used and, in particular interest to this exercise, there are two control voltage lines called Tx 8V and Rx 8V, and are selected by the PTT relay. To obtain a true anti-repeater facility, a DPDT switch can be used to change these lines around to select the opposite crystal. Such a switch is available for use, the "Tone Burst" switch located on the bottom panel. This is not needed unless you wish to prefix each over with a blast of 1800 Hz! The tone burst can be permanently disabled by removing both wires to the switch and connecting the brown wire to a convenient earth point, such as the black wire on the adjacent scan select switch.

This switch is then rewired as a changeover switch, and the two voltage lines are tapped into at the memory select switch (S8). See the diagram for the modified wiring. Wire colours were as in my rig and may not be the same in all others. A few minutes spent tracing the circuit, both in the manual and the rig, is time well spent. Because only DC is involved here, no special constructional methods, apart from good electronic practice, is required.

In operation, changing the switch will do exactly what is needed — interchange the receive and transmit frequencies. It will do this for either offset, because the "+Tx" switch becomes a "+Rx" switch in the reverse mode. On simplex it has no effect. A quick flick of the switch allows monitoring of the repeater's input frequency and is a rapid way of checking the ability of working the other person directly, leaving the repeater free for others.

I have used this for a few months now and have found it extremely useful, especially when mobile, as I don't even have to take my eyes off the road. No doubt it would be possible to adapt this to other rigs using a similar offset selection. ■

QSP

RADIATION

An article in September 1980 QST by W5EDZ the ARRLs Add Hoc Committee on the Biological Effects of Radio Frequency Energy defines the definitions of ionizing and non-ionizing radiation. Ionization occurs when radiation displaces an electron from an atom. These electrons may, in turn, ionize other atoms. Radiation with short wavelengths and high energy (such as X-rays and gamma rays) contain sufficient energy to cause ionization. Radiation with longer wavelengths and less energy (such as ultraviolet infrared and radio frequencies) do not possess enough energy to produce ionization. Because of possible confusion between the two types of radiation, the writer suggests that the words "non ionization radiation" be replaced with either "electromagetic energy" or "radio frequency energy". Because it has always been there, we are more or less immune to any kind of natural radiation that normally reaches us from space (cosmic rays, light, radio waves, etc.) and from background radiation (from rocks, etc) — some of these are benign or even beneficial whilst other are definitely harmful. On the other hand there is also man-made radiation (includes radio and radio waves) forming an increasingly large portion of the total radiation. ■

EXPEDITION TO THE PHILIPPINES — VACANCY

A letter from Brad Warren of Traditional Explorations of PO Box C342, Clarence Street, Sydney 2000, advises the Institute that a group, with a Press representative aboard, will be sailing from Cairns to Manila in a small catamaran in April next year. The group are seeking the services of an expert radio operator to accompany the expedition. If you are interested write direct or telephone Mr. Warren on (02) 29 5871 Bus. or (02) 827 2849 AH for further deails. ■

Ron Wilkinson Achievement Award

Nominations for the WIA sponsored Ron Wilkinson Achievement Award should now be submitted to the Executive Office, PO Box 150, Toorak, Victoria 3142, for consideration.

The award is given to any amateur for a special achievement in any facet of amateur radio.

Examples of the scope of achievement which may be taken into consideration are as follows:—

Outstanding communication achievement, or QRP, etc.; article for Amateur Radio magazine; holder of Australian DXCC; development of State of the Art techniques; involvement in Institute affairs; microwave activity; involvement in WICEN, education, clubs or similar; achievement in using amateur satellites; notable public serving.

These are examples only, the award is extended to cover the whole range of amateur radio activities.

THE AWARD

The award is made up of:—

1. A certificate.
2. $50 cash.
3. Books from "Magpubs" to the value of $50.
4. WIA subscription paid for one year.

It is funded from the interest from the donation of Mrs. Mary Wilkinson, widow of the late Ron Wilkinson VK3AKC, and supplemented by Institute funds if required.

METHOD OF SELECTION

1. Available only to amateurs from VK call areas.
2. Preference will be given to WIA members.
3. Individual amateurs may nominate or make a personal application to the President of their Division by 31st October each year. This time limit is now extended to 31st December to allow for late applications for 1980 only.
4. The President of the Division is then to forward the most meritorious applications/nominations to the Executive, only after satisfying himself that the applications/nominations are worthy of consideration.
5. Executive will nominate the recipient of the award by 31st January, subject to Federal Founcil agreement if considered necessary.
6. The award will be announced in "Amateur Radio" for March.
7. In the event of no nominations forthcoming, the Executive may select a recipient/s.

Further details may be obtained from the March 1978 issue of "Amateur Radio".

If you consider yourself or another amateur a suitable recipient for the award, please forward your application/nomination to your Divisional office **NOW.**

Division Presidents are requested to forward their recommendations to the Executive office by 20th January 1981. ■

The Advertisers in "Amateur Radio" support the WIA member — give them first preference — and tell them so, too!

FORWARD BIAS

VK1 DIVISION

(Postal Address: WIA (ACT Division) Inc., PO Box 46, Canberra, 2600 ACT)

VK1 DIVISION

NEW MEMBERS

We welcomed three at the meeting on 27th October — Ian Fraser, Jeff Gibson and Mike Johnson VK1ZMJ.

VK1 AWARD

Yes, at last we have one!! The printing is complete, we have the certificates, we've written the rules and opened the register. The first three certificates have in fact already been sent to long-standing and patiently waiting claimants, and the honour for Certificate No. 1 goes to Egil Bohn OZ4BO. Numbers 2 and 3 have been sent to Olle Ekblom SM0KV and Yozo Kishikawa JH3KAI. So, Egil, Olle and Yozo, should you get to see this, congratulations and 73 from our President and Committee.

Full details of the award and the rules appear elsewhere in this issue.

JOTA 1980

The 23rd International Jamboree-on-the Air took place over the weekend of 18th and 19th October. The indefatigable Gus Napier VK1NBO, who co-ordinated the VK1 part of the programme, is writing his report and this will appear in the next AR. The monumental task for Gus has been to produce, for the Scouts, a composite log of all the contacts made during 48 hours of operating at the three VK1 stations. In short, JOTA was even more successful than last year, with many more boys and girls participating. Already Gus has JOTA 1981 in mind and he's developing ideas for improving the operating side of the programme.

AGM

Early yet, but the Division's Annual General Meeting will be held on 23rd February, 1981, and that means elections for office-bearers. On the other hand, it's not really too early to start thinking about all this because nominations will soon have to be lodged with the Public Officer. We plan to have nomination forms available very soon. ■

ICOM, KENWOOD OWNERS. If you are not receiving our separate monthly newsletters, your equipment is not tuned to a wealth of information. "Our Second Big Year" Details 2 IRCs. Users International Radio Clubs, 606A Brack Road, Fort Pierce, FL 33450, USA.

VK2 MINIBULLETIN

NOTICE

The Annual General Meeting of the Wireless Institute of Australia, New South Wales Division, will be held at 10 a.m. on Saturday, 28th March, 1981, at 14 Atchison Street, Crows Nest, NSW. Agenda items for this meeting may be submitted to the Divisional Secretary up to 10 a.m. on Thursday, 26th February, 1981. Nominations for election to Council of the New South Wales Division will close at 10 a.m. on Saturday, 7th March, 1981. Nomination forms may be obtained by writing to the Divisional Secretary, Box 123, St. Leonards 2065.

(Sgd.) SUSAN BROWN,
Secretary WIA NSW Division.

READERS FOR THE BLIND

The Royal Blind Society of New South Wales need readers who are knowledgeable in the fields of amateur radio and electronics. The Society has many services for visually handicapped persons catering for their particular needs, including a large braille and talking book library and also a special request service for clients who want something read that is not of general interest. Volunteers are needed to read books, magazines, articles, etc., on to cassette in their own homes on their own cassette recorders. At present, there is a big demand for magazines like "Amateur Radio", "Hi Fi and Music", "Electronics Today International" and "Eelectronics Australia". If you can help, contact Gwenda Ferrett on Sydney 747 622, ext. 31, or write to Royal Blind Society of NSW, Box 176, Burwood 2134.

68%

Did you receive a mark of 68% at a recent AOCP or NAOCP exam? If so, we would appreciate a photocopy of your exam results. Please send to Box 123, St. Leonards 2065.

NSW WICEN CONFERENCE

The 3rd annual NSW WICEN Co-ordinators' Conference was held in Sydney on Saturday, 1st November, at the 729 Club, Crows Nest. This conference provides an opportunity for the 12 Regional Co-ordinators to discuss their problems, exchange ideas and make recommendations to the NSW WICEN Committee which organises WICEN in this State.

The NSW Divisional Council donated $100 towards the cost of running this conference. A total of 18 committee members and co-ordinators were present, together with contributions from Athol Tilley VK2BAD (Divisional President, who opened the conference), Ray Gill VK2BRF (Chairman, Volunteer Rescue Association Radio Committee), Sam Voron VK2BVS (Covener of the first Australian Third Party Traffic Net) and Harold Wright VK2AWH (Observer from Lismore).

During the year, NSW WICEN has received recognition for its activities from the Minister for Services and the Statutory Authorities charged with the control of emergencies. One significant activation was the bushfires over the 1979 Christmas period which were reported in AR and other magazines. Although much has been achieved during the year, more effort is required at the local level to make the police and other authorities aware of WICEN's capabilities.

Two WICEN Newsletters were produced and members should ask their local co-ordinators to see a copy, as costs prohibited the production of them in large numbers.

As a result of the increase in cost of distributing information, the annual membership fee for 1981 has been set at $5 for both WIA members and non-WIA members alike. This falls due on 31st December, 1980, and should be paid to your Regional Co-ordinator.

WICEN members are covered by an accident insurance policy when on exercises and the amount of cover provided has been increased slightly this year. The benefits are generally greater than those provided by the SES. A grant from the Department of Sport and Recreation enabled the purchase of 300W and 1 kW motor generators. This grant was made possible as a result of NSW WICEN's membership of the NSW VRA.

Plans are progressing for the establishment of an emergency 2m repeater in Sydney and negotiations are being finalised for the site. An offer of equipment for a portable repeater has also been received.

No difficulties were experienced in gaining P. and T. Department (now Department of Communications) approval for the 28 exercises which were held and the 6 which were cancelled or deferred. It is hoped that a State-wide message handling exercise will be held next year.

This year there were ovre 160 financial WICEN members, an increase of over 50 per cent, and the increased size and complexity of the organisation has resulted in an increase in the amount of paper work required.

A weekly WICEN net is held on 3617 kHz ± QRM each Thursday at 2130 hrs local to enable an interchange of ideas between co-ordinators and also from any other amateurs. This net is achieving its aims.

The conference expressed its concern that the P. and T. Department appeared to be adopting a discriminating attitude towards WICEN exercises by allowing amateurs to pass non-commercial 3rd party traffic while still requiring prior permission for WICEN exercises. The NSW WICEN Committee will be making further approaches to the P. and T. (Department of Comms.) on this issue.

The information required on a message form used by any amateur who handles 3rd party traffic for the public is very similar to that appearing on message forms currently used by WICEN (see AR April 1979) and hence a standard 3rd party message format will be proposed.

The WICEN organisational structure and membership levels as proposed in the second newsletter were accepted as a guide to the further development of NSW WICEN development at the regional and local level; however it was recognised that all of the features described might not be implemented immediately and local conditions would have to be taken into account.

All WICEN members will soon be issued with a cloth backed ID card. However, the only form of ID that will be recognised by the NSW Police for WICEN during an emergency is the sealed photographic card issued by the VRA. The costs involved in having photographs taken by the official photographer are considerable and could be as high as $9. As a result, this card will be optional for those who wish to bear the additional cost.

With the increasing cost to the WICEN member for membership and the cost of attending exercises, the WICEN Committee is to investigate the possibility of obtaining sales tax exemption and registration as a charitable organisation for WICEN.

A large number of issues were actively discussed at this year's successful conference and consideration will be given to holding next year's in a country region.

David MacKay VK2ZMZ,
Secretary, NSW WICEN.

THIRD CONFERENCE OF THE CLUBS

The Third NSW WIA Conference of Clubs was held at Parramatta Leagues Club on Sunday, 2nd November. Eric Bierre VK2BEK was elected Chairman and Ross Wilson VK2BRC Secretary of the Conference. Thirty-five members of the NSW WIA attended the Conference. The following delegates represented fifteen affiliated clubs (the number after each club is the vote, based on 10 WIA members per vote) — Neville, 2DR Bathurst, 2; Barry, 2DBA Goulburn, 2; Guy, 2BBF, Hornsby, 2; Geoff, 2ZHU Illawaraa, 6; Val 2BVR, Liverpool, 3; Bob, 2AWA Manly Warringah, 3; Kevin, 2BKG Mid South Coast, 5; Mike, 2NKH/YFI, Novice, 2; Peter, 2TK Orange, 2; Bill, 2WD Oxley, 3; John, 2BXD South West, 4; Ed, 2AQF St. George, 7; Geoff, 2BGF Taree, 2; Russ, 2AZR Wagga, 3; David, 2BWK Westlakes, 7. There were also 11 observers from the above clubs and Summerland, and 8 spectators, including 4 members of Divisional Council and representatives from Castle Hill RSL RC and Crestwood ARC.

Among the many topics discussed at the conference were the following — personalised numbers plates for amateurs; operators using foul language on amateur bands, in particular 2 metres; the point

scoring system in contests, especially the John Moyle FD; fee increase for amateurs; combined fee for NAOCP/AOLCP licensees; on air liaison nets; new HF bands; Institute membership leveds; 6 metre band; "gentlemen's agreement" on amateur bands; inter-club contests within the John Moyle FD; the role of the conference within the WIA; publicity for amateur radio; 160 metres for novices; car badges for WIA members; changes to morse exams; and callbooks. The Divisional President also presented a written report and answered questions on actions taken by council as a result of the 1st and 2nd conferences.

A ballot for 2 UHF transceivers was conducted. The successful clubs were Westlakes (metropolitan) and Summerland (country). At the conclusion of the conference, Keith Howard VK2AKK presented the Novice Contest Trophy, on behalf of Westlakes ARC, to the Divisional President, who accepted it on behalf of the Federal Contest Manager.

The Secretary of the Conference, Ross 2BRC, kept comprehensive minutes of the meeting, and any member who would like a copy is invited to send a foolscap SAE to the Divisional Secretary, NSW WIA, Box 123, St. Leonards 2065.

COUNCIL REPORT

Contrary to previous advice, council is proceeding with the steps to alter Article 82 as directed at last May's EGM. At the council meeting of 17th October last, two clubs were accepted for affiliation. Welcome to Mid South Coast Amateur Radio Club and Moree and Districts Radio Club. Council adopted by-laws for the election of council and for the termination of affiliation of clubs. Send SAE for a copy. In future, all divisional communications will use the 4 figure channel numbering systems for VHF and UHF FM frequencies as adopted at federal conventions.

As from 1st January, 1981, the fees for handling non-members' QSL cards will be increased to 5c per card. Council will be submitting a proposed alteration to Article 48c to the Corporate Affairs Commission for approval by the Attorney-General. If the proposed change is approved by the Attorney-General, it will then be submitted at the next Annual General Meeting of the division for approval by members. The proposed change is that the closing date for nominations for election to council be moved forward seven days, from 21 days to 30 days before the AGM. This change would eliminate the need for two postings to members, one with agenda items and one with the ballot.

Council approved the installation of two control consoles for engineering and studio facilities at Dural and the replacement of the valve 6 metre FM transmitter with a solid state unit. Thanks must go to the Dural committee for undertaking this work, in particular Jeff VK2BYY and Doug VK2ZYM.

The $500 from the Dick Smith Auction will be invested in debenture stock and the interest derived used to provide prizes for Amateur Radio Study Weekends conducted by the Education Service.

SWARS 28th CONVENTION

Conducted over the last weekend in October at Griffith, the convention had its usual excellent trade displays and events of interest for all the family. Approximately 150 attended the Hawaiian dinner dance on the Saturday evening. The dinner, hosted by the Griffith ARC and ably assisted by the Wagga "animals", was very enjoyable. Somehow the organisers forgot about dayilght saving, and timed the first foxhunt on Sunday morning to start at 8 a.m. (actually 7 a.m.!). The faithful hounds were out in force, however, despite some sore heads.

The prize winners for the weekend were: 2 metre scramble, Jeff 2YNY; 80 metre mobile, Charlie 3VEJ; Saturday foxhunts, Alan 2YSU; Sunday foxhunts, Jeff 2YNY; overall foxhunts, 1st Jeff 2YNY, 2nd Sue 2BSB; women's quiz, Cathy Lambert; CW receiving, 1st Sid 2SW, 2nd Russ 2AZR; antenna gain contest, Graeme 2DGW; raffle (a $350 2 metre transceiver donated by Peter 2ZXL), 2CAS.

Watch out for next year's convention, some time in October.

Sorry, no room this month for club details. Will put in extra next month.

COMING EVENTS

22nd February: Gosford Field Day.

28th March: AGM, 14 Atchison Street, Crows Nest.

Susan Brown, Secretary NSW WIA. ■

POST SCRIPT

SURPLUS EQUIPMENT

Just as these notes were being compiled the Division's disposal personnel received an offer of some black and white video cameras and ½ in. reel to reel videocorders. In order to determine interest details were given on the broadcast on 2nd November, as well as information sheets to some clubs and the delegates to the C of C. The result of the survey indicated that the interest was there and steps are being taken to accept the offer, in part.

We will be accepting the tape recorders and the survey indicates that a ballot is likely. A percentage of the equipment will be held for those members who did not hear about the offer from other sources. Hoping that this issue is delivered on time, the expected ballot will close on the 16th December. To apply, VK2 members write to the **Secretary, WIA NSW Division, PO Box 123, St. Leonards 2065.** Enclose cheque to the value of goods. Our usual terms for surplus sales apply. Items sold as is, for members own use, and not for resale.

The tape recorders have been used in an education dubbing service and have been maintained under contract. They were withdrawn from service because the format is no longer used. They are **"Sony AV-3600CE videocorders", CCIR monochrome videotape recorders.** ½ in. reel to reel tape is used. Tape is available, we understand, from both new and second-hand sources and should be worth approx. $20 for an hour reel. Cost will be eighty dollars ($80) ex Atchison Street. Delivery extra, at your cost. Please indicate delivery method preferred. A photocopy of the service manual will be supplied. Size 408 mm w., 231 mm h., 335 mm d. Weight 16.5 kg. 240V AC.

The cameras are not as interesting on a closer investigation. They are new but do not include either a lens or viewfinder. The standard lens used is a f1.8, C mount. The viewfinder (not supplied) is electronic — small tube — in a housing the same size as the camera and mounts on top. Camera size 110 w. x 120 h. x 330 d. mm. Weight 3.55 kg. We understand that a few may be available at $120 (one hundred and twenty dollars), ex Atchison Street. Remember it is a bare camera.

Type Sony AVC-3250. Black and white. Designed for use with the videocorders and/or for use with closed circuit monitoring, etc. If interested please enclose a separate cheque if you are applying for a recorder. A copy of the manual would be available.

The Broadcast operators and the Dural team would like to wish all Members all the best for Christmas and the New Year. So that they can have a break there will be no morning or evening voice broadcasts on December 28th and January 4th.

The University of NSW Amateur Radio Society will be conducting their usual Christmas study course this year. They will be meeting at Atchison Street. Commencement about the middle of the month. Details on the broadcasts. ■

QRK5

A monthly transmission from the Victorian Division WIA.

Written and co-ordinated by VK3WW, QTHR.

WILLY WILLY'S WORDS

To all readers, friend and foe alike, may I wish you a very Merry Christmas and Prosperous New Year. The same wishes extend especially to my fellow scribes in other Divisions.

FEE RISE

Yes the note in October AR is now a fact and fees will rise to $30 in the new year. General opinion voiced on 2 metres is in favour of the rise — one comment was that it is worth $30 just to use the repeaters. It is to be hoped that there is no silent majority that will say nothing and just not renew membership.

BUSY — BUSY

An old saying about getting a job done by giving it to a busy man has once again been proven. Peter VK3ANX, who is chair-

man of the Broadcast Committee and also the State Co-ordinator for WICEN, produced the following notes on WICEN activities within 24 hours of being asked.

WICEN ON THE MURRAY RIVER

This Christmas, as usual, the Victorian WICEN team will join forces with 2,000 other masochists for the Red Cross Murray River Canoe Marathon. This year over 300 canoes are expected to take to the water at Yarrawonga on December 27th and paddle their way down to Swan Hill for New Year's Eve. The Marathon relies heavily on reliable communications for the efficient running of the event and, more importantly, for the safety of competitors.

For each of the five days of the event WICEN provides communications between 6 check points, 6 safety boats and 3 or 4 key personnel. Check points require 80 metres off a dipole and 2 metres on the common simplex frequencies. Portable generators and after-burners and beams for 2 metres are optional luxuries. Boat stations are provided with a source of 12 volts and expected to provide their own 2 metre rigs, aerials and leads. Other stations are normal 2 metre mobiles with 80 metre mobile as a luxury extra.

All operators are expected to fend for themselves for the 5 days, however the organisation does provide camping sites for all officials and meals can be provided if organised in plenty of time.

The WICEN team comes from all over Victoria and usually attracts a few starters from interstate. There are never too many operators and the Victorian team extends a hearty invitation to all Victorian and neighbouring amateurs to come and lend a hand. Red Cross describe the Marathon as "The Great Experience" and although they are aiming this pitch at canoeists it is just as big an experience for WICEN and the other officials. The hours are unforgivable, the atmosphere is incredible and the effort is in an excellent cause. You may never come again (or you may be hooked), but a Marathon will give you something to talk about for a long, long time.

VK3 WICEN places no heavy qualification on operators and is able to find a job for everyone from the almost qualified to the all frequencies/all modes WICEN expert. All starters will be given a role according to their experience.

If you are interested in participating, contact the State Co-ordinator, Peter Mitchell VK3ANX, QTHR, or phone (03) 592 8179. If you are going to require Red Cross catering, make it soon.

THANK YOU!!

John VK3NUI sent me some interesting mods for the receiver in the FT7. Thanks, John. I have sent copies interstate and to our "Novice Notes" editor. I have heard that the transmitter final can be fitted with more powerful transistors and a few simple mods to upgrade power to about 50 watts, but have no details as yet.

Alan VK3SM sent in a magazine dated November 1928. The feature article was the "Pentode Three", a great receiver, they claimed. The price of parts was very high in those days compared with the average wage. The old-timers didn't get it as easy as we do today. Thanks, Alan, for some nostalgic reading.

DEADLINES

Due to the holiday season notes for January 1981 have already been submitted and I will need any copy for February by 15th December at the latest.

73. Mike VK3WW. ■

SPOTLIGHT ON SWLing

Robin Harwood VK7RH
5 Helen St., Launceston, Tasmania 7250

Well, another year has drawn to a close. In retrospect, 1980 has been quite a mixed bag as far as short-wave listening. The Sunspot Peak has passed and higher frequency signals will now slowly deteriorate. Already the number and frequency of ionospheric disturbances and drop-outs have increased over the past few weeks. It is interesting to note that there are unusual propagation patterns that precede these disturbances with signals being observed from areas and regions not normally heard at that hour. For example, signals from Europe on the long path being monitored on the 21 MHz band at 2300Z, up to seven hours before long path transmissions are usually heard. Also WWV has status reports on Ionospheric and Geomagnetic Conditions at 18 minutes past the hour.

At the end of this month, the BBC is planning to end its popular programme for SWLs, DXers and those interested in electronics, the World Radio Club. Over the many years this programme has been aired, it has brought news of developments within electronics, as well as assisting the listeners with tips to aid them in their hobby. It also provided weekly news on what is happening in the international broadcasting scene from the BBC's Monitoring Service.

No reasons have been stated yet why it is being taken off. However, the BBC has been rationalizing its programming over the past few months. It is to be hoped that they will reconsider their decision as it is one of the most popular and informative of all the programmes for the SWL and the DXer. In January this year, Radio Australia also discontinued its programme "Club Forum", which included news and reports from the DX scene in Australia as well as the observations of overseas listeners of Radio Australia.

This highlights the strained relationship between the international radio stations and DX Clubs and individuals. More stations are altering or discontinuing the practice of issuing QSL cards for the verification of reports. The main reason being advanced for this is that financial and manpower shortages of the various organizations have led to a rationalization of available resources. Hence they see no pressing needs to issue thousands of individual QSL cards.

The mass production of simple and rather cheap transistor radios led to a very substantial increase in listening audiences and mail volume during the mid-sixties. The majority of the audience then, as now, is mainly listeners. The DXer still has a contribution to play as the average listener does not have the sophisticated equipment or possess the specialized knowledge of propagation or frequency usage, etc.

In the mid-seventies with the release of solid state receivers such as the Yaesu FRG-7 and Drake SSR 1, together with an explosion in things electronic, particularly in Japan, saw an increase in reports for verification. As the quantity of reports increased, their quality decreased.

Many international broadcasters have entered into co-operative agreements to use their monitoring facilities to assess the signals. So the DXers' reports were not needed.

This situation points up the difference between the SWL and the DXer. The European DX Council (EDXC) defined a short-wave listener as one who listens to programmes or message content from radio stations. They also define a DXer as one who listens for the station without regard to programme content. He will also report reception of the station and endeavour to have the report verified. A DXer can be an SWL, but conversely an average listener is not a DXer. An SWL can be regarded as passive, and a DXer can be regarded as active listeners.

The broadcaster is aiming for a wider audience of listeners and not for random listening by the DXer. It is an individual pursuit and basically a personalized activity. For further reference on these points, I recommend that you consult a pamphlet published by the Australia Radio DX Club on "Verification Standards" and also a "Guide to DXing", both compiled by Bob Padula, a noted DXer.

Well, that is all for this month. May I wish you a Happy Christmas and a Prosperous 1981. 73s from Robin L. Harwood. ■

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ANTENNAS

TET HB35C	was $415	**now $390**
CUSHCRAFT A3	was $325	**now $290**
HY-GAIN TH5-DX	RRP $447	**now $420**
HY-GAIN TH3-JR	was $250	**now $237**
HY-GAIN 18-AVT/WBa	was $125	**now $115**
HY-GAIN 8el 2M	was $40	**now $37**
HI-GAIN 14 el 2M	was $50	**now $47**
HY-GAIN GPG-2	was $30	**now $25**
HELICALS	were $25	
10-15-40-80M w/adjustable tip		**now $20**
20M w/adjustable tip EXTRA SPECIAL		**now $15**

CONNECTORS & ACCESSORIES

PL-259	were .75c	**now .50c**
GLP Rt angle	were $1.50c	**now .75c**
MLS Rt angle	were .75c	**now .50c**
CABLE JOINERS	were .75c	**now .25c**
M-RING body mount	were $1.50c	**now .75c**
SWR METER	was $25.00	**now $20.00**
ASAHI Bumper mount	was $8.00	**now $6.00**
STANDARD Bumper mount	was $5.00	**now $3.00**
SPRING MOUNT	was $15.00	**now $13.00**
240V/2 x 9V transformer	was $8.00	**now $6.00**

ROTATORS

CDE T2X	was $300	**now $285**
CDE HAM-IV	was $225	**now $210**
CDE BT-1A	was $110	**now $100**
KEN KR-400	was $140	**now $130**
KS-065 BEARING	was $30	**now $25**

HENRY LINEARS

2KD-5 2KW	was $1000	**now $950**
1KD-5 1200W	was $800	**now $750**

YAESU MUSEN PRODUCTS

FT-101ZD W/FAN	was $850	**now $810**
FT-707 SERIES		**POA**

CABLE

RG-8U COAX PER METRE	was $1.20	**now $1.10**
RG-58U COAX PER METRE	was .50c	**now .45c**
CONVERSION XTALS	were $32.00	**$25.00**
BN-86 BALUN	was $25.00	**now $23.00**
HI-Q BALUN	was $15.00	**now $14.00**
SHINWA 10W UHF 3 CH 450-477 MHz COMMERCIAL TRANSCEIVER NEW		**$375.00**

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R-599 RECEIVER W/SPEAKER		**now $325**
VP-1 MOBILE ANT. MOUNT	RRP $45	**now $35**
MC-501C MICROPHONE	RRP $31	**now $25**
SP-180 SPEAKER W/FILTERS	RRP $73	**now $60**
TV-502 TRANSVERTER	RRP $326	**now $250**
RD-300 DUMMY LOAD	RRP $87	**now $75**
LF-30A FILTER	RRP $35	**now $30**
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Proprietor – ROY LOPEZ (VK2BRL)

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DIVISIONAL NOTES

VK3

VK3 DIV NOTES —— ——

TWO METRE FOX HUNT

The two metre fox hunt VICOM competition for the year 1979-1980 was won by the VK3BMV-VK3BRY team in a thrilling finish. A knockout tie-breaker was required to separate the three contenders

The prize was presented by Russell Kelly VK3NT, managing director of VICOM, at the September Victorian Division General Meeting The prize of an ICOM IC22S was also the 400th IC22S handled by VICOM. Also the initiative taken by VICOM in sponsoring the competition has been taken up both interstate and overseas by ICOM dealers. ■

The winning team.

Russell Kelly presenting the prize.
Photos by Dale VK3AAE

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"Standards"

One of the first things we learn in dealing with electricity is Ohms Law. The three basic units Volts, Amperes and Ohms are familiar to all amateurs. Less well known, perhaps, are the people responsible for the discoveries so important to us today. Reference to the World Book Encyclopedia tells us that Count Alessandro Volta (1745-1827), born in Italy, won fame as the inventor of the electric battery and the condenser . . . the **"Volt"** was named after him. Andre Maria Ampere (1775-1836) was a **French** mathematician who discovered the laws of electromagnetism in the 1820s. Georg Simon Ohm (1787-1854) was a **German** physicist who discovered the mathematical law of electric currents called **"Ohms Law"** in 1826. Heinrich Rudolph Hertz (1857-1894) was also a **German** physicist who, following the work of Maxwell, opened the way for the development of radio, TV and radar with his discovery of electromagnetic waves between 1886 and 1888. These and thousands of others through the years have been responsible for the development of electronics to the degree of sophistication we have today. With every new invention, **standards** are adopted as a means to measure and compare: The **standard** Ohm is defined as the resistance, at 0°C, of a column of mercury 106.300 cm long and weighing 14 4521 grams. An unvarying current which passes through a solution of silver nitrate of standard concentration at a fixed temperature and deposits silver at the rate of 0 001118 gram per second is equal to one Ampere, or 6.25 x 10^{18} electrons per second passing a given point in a circuit. "Standards" are an integral and essential part of our lives. National Bureaux of Standards now exist by Government decree in all developed countries and there we can check our instruments, and other measurements, with sub-standards which are regularly compared with ultimate standards carefully maintained and guarded in various parts of the world. The standard metre was defined by International agreement in 1960 as 1,650,763.73 wavelengths of the orange-red light produced by artificially excited atoms of Krypton-86 (an isotope of the element Krypton). This standard for the metre replaced the platinum-iridium bar that had previously served as the International standard of length. So we are surrounded by standards: measurement of distance, time, weight, volume, sound, light, etc. Other standards are important for our everyday living.

Because we are a gregarious society we must of necessity develop social standards, and live within them for harmonious relationships. Some people measure by the Ten Commandments, some by the Golden Rule, some by the laws of the land. Regulations that govern our lives are oft-times irksome, but unless we elect to live on a desert island, are mostly for our common good. Perhaps more than other people, with our communication potential, locally and internationally, amateurs, with a large audience of listeners, can well set a standard of behaviour which can either denigrate or elevate our hobby.

John VK2BTQ — From "Lyrebird" Spring 1980 ■

STOLEN EQUIPMENT

Recently a large quantity of equipment was stolen from Willis Trading in Perth. It is thought that the stolen equipment may come East to be sold

Included in the robbery were: **Kenwood TS600** 6m transceiver, **S/N 610380; Icom IC251A,** 2m all mode, **S/N 10910587; Yaesu FT707** TF transceiver, **0HO30451; Kenwood 100W amplifier** TL120, **S/N 800009; Kenwood R1000 receiver, S/N 1001024;** UHF hand-held scanner, **Hamdie;** 50 ohm dummy load; several multimeters, **Fluke;** Kenwood grid clip meter; BSR turntable, P157; auto telephone dialer, Nidac 344, PDE/1; Icom IC2A 2m hand-held; two Emotator rotators, **models 502 and 103.**

Should you be offered any of the above equipment report the matter to your local police or Willis Trading in Perth, Western Australia.

LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

55 James Street, Latrobe, Tasmania 7307
9-10-1980

The Editor,

Dear Sir,
I would like to reply to the letter from VK2ARN on page 46 of the October issue of AR.

I agree it is fairly easy to obtain a licence to break into Amateur Radio. Many people like mystelf may never have been able to break into Amateur Radio until the introduction of the NAOCP.

I also agree that operators at this lower level should treat Amateur Radio with the greatest respect and decorum. I am of the opinion that the Novice requirements for CW should be 10 w.p.m., and for the AOCP the speed should be 12 w.p.m., which would then enable an operator to obtain a reciprocal licence in ZL.

With regard to the latter part of VK2ARN's letter, I fully agree with what he has to say, although it may be a little late now.

I think that EVERY retailer of communication equipment should only sell to a person who can produce the necessary licence to operate — or to a person who can produce information that he or she is awaiting a licence. The retailer should then have to forward a full report to their Radio Branch, giving full details of the transaction.

This may prevent equipment falling into the wrong hands.

Yours faithfully,
J. Davis VK7NOW. ■

8 Belfast Road, Brunswick 3056

The Editor,

Dear Sir,
I enjoyed reading the article "Why ASCII" in AR October, 1980. However, I was disturbed to read at the end of the article a misleading definition of the transmission rate unit — the baud. The baud is in fact NOT the same as bits per second as implied by the article. Actually the definition of the baud is as follows:

The baud is a unit of signalling speed equal to the number of discrete conditions or signal events per second.

Therefore, the baud is the same as bits per second ONLY if each signal event represents exactly ONE bit.

For example, consider the bit combinations 11, 10, 00 and 01. These are referred to as "dibits". If these were transmitted at a rate of 1200 dibits per second, then we have a transmission rate of 1200 baud and a bit rate of 2400 bits per second.

I hope that the above clarifies the difference between baud and bits per second.

73. Ian Palmer VK3YIP. ■

September 16

The Editor,

Dear Sir,
Jack Mellor's repugnant remarks against the novices (July AR) is, unfortunately, typical of an unfortunate minority within our community who gain pleasure by stirring, especially if it is against the underdog or others considered by him to be inferior.

The two letters in September AR (John Dowsett VK6NJD) and Alan Stubblety VK3NWV) show the contempt the novices had for his despicable remarks.

However the more the novices reply to the irresponsible Mellor the happier he will be.

With respect, Mr. Editor, may I suggest you close the correspondence as, like "The Sullivans", it will continue for a long, long time.

Mellor fits into that category defined by the former deputy provost marshal of the RAAF and once chief of the Victoria Police CIB, Group Captain Ted Rosewarne:

- "A bully is always a coward" and
- "Ignore him and he'll die".

I have seen and experienced the best and the worst in this world during more than 40 years in journalism. Mellor's in the latter category and I feel so sorry for him. He will have few friends, he will always be lonely and as the twilight of his years come on him his life will be a misery.

The novices have been a credit to our hobby and they have been an inspiration to many trying to make our ranks.

73. Roth Jones VK3BG ■

8 Dexter Drive, Salisbury East SA 5109
16th September, 1980

The Editor,

Dear Sir,
I recently forwarded to you a letter outlining the QLS policy for operations by Alex VK9CCT from Cocos Keeling Island. These operations are, as previously stated, carried out on an "opportunity" basis. Since writing the above letter we have made arrangements to have a "QSL Manager" appointed to handle cards for the USA, Canada and other American possessions.

This will allow, in most cases, for operators in these areas to obtain their QSL card for the cost of two-way mail within the USA, which I believe will amount to no more than 30 cents. This will most certainly result in quite a saving for those operators concerned, especially when compared with the method of having to send their cards all the way to Australia.

The QSL Manager for VK9CCT for North America (i.e. USA, Canada and USA possessions such as for example KG6) will be Bob WA9WWT, who will be assisted in the task by Doc KB9EZ and Jim WA9TNC Both Alex and I are most appreciative of the generous offer by these three gentlemen to carry out this QSL chore, which will take quite a load from our shoulders. I am sure that the North American boys would like me to publicly thank them for being so prepared to undertake this taks in the real spirit of amateur radio, as by helping in this way they will be doing a good turn for so many operators.

The QSL information for VK9CCT will therefore be as follows: Bob Polhamus WA9WWT, 703 N Brentwood Lane, Muncie, Indiana 47304.

I would like to emphasise that this QSL information does not apply for stations outside of North America, who should continue to send their QSL cards via VK5QX, the address information being: Ian J. Hunt VK5QX, 8 Dexter Drive, Salisbury East, SA 5109.

It is hoped that Alex will be able to continue his operations from Cocos Keeling Island from time to time as circumstances permit. In the meantime we are working on ways to improve the efficiency of both the station and methods of operation, particularly bearing in mind the very short duration of each of his visits there.

73. Ian VK5QX. ■

1 Hillside Crescent, Epping, NSW 2121
September 10th, 1980

The Editor,

Dear Sir,
This isn't an irate letter, nor it is a reply to Mr. Jack Mellor's broadside. He has been sufficiently dealt with.

But I would in a friendly way ask that the Novice licence not get a nick-name such as "Temporary Call" as suggested in QRK5 in the September issue of AR.

Some of us will **never** get a full call because of senility. I'm 77 years old, had quite some difficulty getting my Novice three years ago. I understand the theory perfectly, but cannot retain the details for exam purposes. The human brain cells decay in old age and no amount of study makes up for the lack of them. I know that you'll be showered with letters from exceptional people!

Having a Novice call is like being a bird let loose from a cage. When I'm finally located in an aged persons' home, I can never be lonely, but can speak to the world.

It would be a tremendous deprivation if people like me were to lose this privilege through the thoughtlessness of younger fry who are lucky enough to have unimpaired brains.

Please, not the nick-name of Temporary Call!

Yours faithfulyl,
Norman Blake VK2NDG. ■

40 Hardwicke Street, Balwyn, Vic 3103
14th September, 1980

The Editor,

Dear Sir,
The letters published in September AR in reply to VK3AMG's comments on licence tenure present very divergent views on the purpose of amateur radio.

Omitting the vituperation which unfortunately each of the writers have engaged in, it is clear that Mr. Stubblety supports "a most friendly world-wide fraternity" (characteristic of **most** amateurs for many years) and suggests a statement of policy by the WIA on licensing generally.

In the other letter, Mr. Dowsett has unwittingly confirmed VK3AMG's comments about degenerating standards of operation. If the ability to "knock off" other calls, whether by "legal" or other means, is one of the pleasures (?) which attract some people to amateur radio, then the enjoyment which the hobby has provided for a very long period will eventually be destroyed.

If Mr. Dowsett has succeeded in producing a "super" antenna suitable for home-brewing, perhaps the Editor could conclude this regrettable "hornet's nest" by inviting VK6NJD to prepare an article for AR so that amateurs wishing to preserve the concept of friendly communication may share the benefits of his ingenuity.

Yours faithfully,
R. Goslin VK3SV.

We are always receptive to new articles.—Ed. ■

PO Box 313, Morphett Vale, SA 5162
30th August, 1980

The Editor,

Dear Sir,
I would like to comment on the letter from J. Bush in the August issue regarding the possible misuse of technical modifications by CBRS operators.

I can sympathise with the reasons behind the letter, but feel that I can contribute some information pertinent to the writer's thoughts which may allay his worries.

What is not generally known is that there has been a large number of mostly overseas publications — one in fact called "Secret CB" — in existence over a number of years, describing in detail many "clandestine" modifications, all of which are naturally illegal in the CB Radio Service.

Let us remember that there are many extremely capable technical people involved in the CBRS both as operators and as modifiers, and JB (and others who share his point of view) need not worry unduly as mods that eventually are submitted to AR and other publications have in all probability been in use illegally in one form or another for a long time.

Some twelve months or so ago I tuned just below 28 MHz and listened, and heard an American and an Australian having an amateur-type QSO; it appears that more than one American is happy to drop his official amateur call sign, QSY down and out of band, and conduct a DX QSO.

May I emphasise that I do not defend the situation; merely I draw attention to the fact that it exists. We would be wise not to put our heads in the sand.

Which brings me to the P & T's request for inputs to their regulatory enquiry into the CBRS, and the official WIA attitude. I support the WIA whole-heartedly, but I feel that it is unrealistic to think that the CBRS on 27 MHz will cease on 30th June, 1981, for several reasons, four of which are:

(1) Lobbying by those with a vested financial interest created the situation where unlawful usage of the band had to be approved, and although sales volume has dropped off a lot, there will still be

pressure by those who put their money where their mouths are. I personally felt at the time that the short-term 27 MHz allocation was unrealistic and the bandwidth equally useless, so possibly both of these decisions were made as a sop to those the band was taken from — us.

(2) The huge number of licensed sets and even larger number of unlicensed ones would **all** become pirates overnight if the service were disbanded and this obviously would create an even worse monster than in June 1977.

(3) The CBRS operators are asking for an expansion in the number of authorised channels. I personally do not know what spectrum usage officially exists between CB channel 18 (Australian) on 27.225 MHz and 27.995 MHz, but apart from CB pirates it must be pretty vacant land or else we would have heard screams from commercial users. I ask myself what hurts the amateur radio service if further channels are allocated.

From comments in AR several years ago, one gathers that the ISM band was allocated here in Australia to the amateur service purely so that it could be occupied by someone. Why do we want it back? Are we going to use it? I doubt it. Remembering the 1976-77 "hate-CBer" furore, my thoughts are that many of our "gentlemanly" licensed amateur "brothers" used it to jam the dastardly pirate users, even to the extent of WIA broadcasts being relayed. This does not mean that illegal operators should get away with it, but they are (most of them anyway) legal now. There is **no doubt** that it will still be occupied, regardless of legislation, after the cut-off date, so isn't it better sense to help retain its use legally by supporting them, than to try to force them to become pirates again?

Personally I am happy with 10 and 15 metres (I can hear some readers saying "Bully for him, I'm not"), and providing that anarchy doesn't prevail on 11, why not support a motion to let them retain it beyond June 1981?

(4) The CBRS appears, from comments in "another place" (parliamentary language for the rival assembly) to be settling down, and those who confine their operation to a mere 36 SSB channels actually call the others pirates. Retention will still produce a source of supply of new amateur operators in the future, although not to the extent that the period 1976-1979 did.

Having aired my views, I now cringe in my shack, waiting for the flack to fly from those who oppose change.

C. R. W. Ashton VK5DQ.

Licensed 1972. Never pirated on any band. ■

388 Huntriss Road, Woodlands, WA 6018

The Editor,

Dear Sir,

The Contest Manager and assistant for the VK/ZL Oceania, when conducted by the WIA, take this opportunity to answer some criticism and present some facts. At the 1980 Convention a sample of logs were shown to help Councillors appreciate the various ways in which logs are presented for checking. Your Councillor will vouch for the great range of legibility and accuracy of the logs. However, they are not ruled out of the contest unless, as my assistant put it, "even my chemist couldn't read it". Logs where the scoring was wrong were re-scored and no loss of points occurred. We feel that a high scoring log does not excuse the operator from writing out a legible log entry. Both people concerned with log checking have quite a number of contest certificates to show "a high level participation" in contests. If the signal exchange as ACKNOWLEDGED by both operators, there is sufficient time to write down the details of the signal exchange clearly. Perhaps some operators need more practice in remembering to carry out the previous comment?

There is no need to re-copy your log, a carbon copy you keep, just send us the original. We need to see if any attempt has been made to remove duplicates, so the need for the original. What's the value of a high scoring log if duplicates are not removed?

Overseas logs usually do not have these problems, possibly because most overseas contests carry a penalty if the log has duplicates and the operators are used to this fact. Our next set of rules will carry a similar penalty.

Blatant cheating doesn't seem to occur in VK/ZL entries, but we do receive some from overseas. After 12 years of checking logs we find experience is a fine teacher and, with the help of our sister organisation overseas, most "cheaters" are found out.

Now, why the delay in publishing the results? Quite simply, it's a long, time-consuming, tedious task of log checking and compiling results. Remember how long it took to write out your log, then multiply that by some figure between 400-500 (logs entered in contest) and you arrive at a figure possibly close to what we put into the contest checking (our SPARE TIME!). Results are sent to AR, who will publish as space permits. Certificates are not sent out until the results have been published for at least a month. This way we may be notified of our mistakes **before** the certificates are printed, enveloped and posted. Certificates take about half an hour each to write out, envelope and address.

Like every other contest organisation, no communication will be received by the winners other than the reception of their certificates. VK/ZL winners are quite lucky, ZL2GX for the NZART, and the WIA get the certificates to the winners before the following contest. Yesterday I received my IARU Radiosports Certificates, 14 months after the contest!

In a recent letter by VK5MS, he says that "We should reserve our energies for useful contribution to our tasks, and maybe we are too busy involved in some DX nets where contacts are arranged". If the intent was to say we should give more time to the contest management than we already do, then the simple answer is that we are not prepared to do so.

The Federal Contest Manager at the 1980 contest said how he spent around 200 hours on the RD log check. I feel that he underestimated and, besides, the VK/ZL is more involved. Should anyone wish to take over the running of the contest, it will be gladly handed over with our blessings.

The rules of the 1979 contest have been appraised and found to lack incentive to work all bands; this we agree. "1980" rules have changed you may have noticed, and compared to 1979 the 1981 rules could be different again. It will pay to read them closely, and so take advantage of our efforts to enhance the contest.

Close liaison between ZL2GX of the NZART and myself exists, and between us we strive to keep the VK/ZL to the forefront on the international scene. But please let us know what rule changes you want, as even with the logs, we receive very little feedback.

One final comment, or two: letters to the contest organisers are appreciated and will be answered, and the pay of the VK/ZL contest committee is inadequate.

73s, Neil VK6NE, VK/ZL Contest Manager for WIA. ■

THE ANNUAL INDEX
and the
FIVE-YEARLY INDEX
of Amateur Radio Articles
will be published
early in the new year.

YOU and DX

G. (Nick) Nichols VK6XI
6 Briar Place, Ferndale, WA 6155.

The Christmas/New Year period with its numerous gazetted holidays will no doubt give many of us additional opportunities to work the bands. DX wise conditions should be excellent, whilst Cycle 21 has reached and passed its peak, 10 metres reflects none of this down-turn and despite its many knockers continues to be reliable and an often quite surprising band on which to chase DX. For this and the coming couple of months the north polar path should prove interesting early in the mornings, whilst for the insomniacs good paths either long or polar should occur into the North American and Caribbean areas.

FACT AND FICTION

Abu Ail J20/A, mentioned in October AR, now confirmed and unless some unforeseen delays occur, December 5th should see commencement of operation.

N2KK/6 continued his jaunt around the Indian Ocean, J28 and possibly ST activity late last or early this month.

Rumours of a 3C1 activity by Spanish amateurs — no other deails known.

Possible activity (this is a real slim one) of 3X activity by a VK4 novice — has permission to operate but that elusive piece of paper is proving a problem.

PIRATES

BV2BK is a no-no; A2PR, AR2P and other weird combinations must use time travel, forget his location, name and when questioned goes QRT — without doubt a no-no. VP8MZ, VP8JO are not licensed, MZ being absent-minded about location — beam headings, time, mode on these two to VP8AI please.

10 METRES

Excellent conditions prevailing, watch however for the usual openings, short in duration, which often yield the choicest DX, crooked path particularly into the South American continent appears to be the rule rather than the exception, due east and slightly north of east together with north polar headings may also be of value.

On CW HS1AMX, AH2AD, FK8DD, N7ET/DU6 and P29SU all appeared on a regular basis whilst on phone at good strength the following were heard and/or worked 3B8DB, 3B8RS, ZK1CE, A9XDB, 3D2UR, HB9AOX/5N6, S79NLB, KZ70/UP9, FW8SC, W6KG/SV9, FO0DX, KA6H1Q/KH3, LU4MDX, CX3BBH, EA6ET, VS5RP, ZF1SB, FM7BX, H18XGC, T3LA, KC6YC and ZR (both Eastern and Western Carolines), 8Q7AV and AZ and JT1AN (regularly on W7PHO net on 28.570 at 00.00Z).

15 METRES

Surprisingly quiet, even the woodpecker is notable by its absence, usual solid propagation long path to Europe, some good opportunities to work into the African and Caribbean areas also.

On CW KG4KK, VP9JM, PY1DUB, YB5ANT, 7X2MB, VS5RP and VK9NC appeared with regularity whilst on phone T3AZ, YS1MS, PZ9AB, VP8WA, ET3PG, S79NLB, 9M8PW, EA9GS and HK0FBF had fine signals.

20 METRES

As usual, loaded with plenty of DX but plagued with QRM (it's high time a maximum power limit below 500 watts was imposed world-wide); on CW the "gentlemen's" mode (take that with a grain of salt, the tactics, manners, etc., are at times unbelievable — VKs included) under the QRM and breaking stations could be heard the following: CP3CN, LU3KA, TG9AC, YV5TT, VP5SDA/HK1, GU5DQT, TF3JO and 3B8DB. Whilst on phone (at least some sanity prevailed on this mode — for a change!) J73E, J6LT, PY7/PO/PY0, CE9AL, PJ2CZ, 4U1ITU, VP8ZR, M1B, VP2EA, 7P8PI, FM0FJE, FY7AN, CR9B and WB4ZNH/5X5 were available for the patient listener.

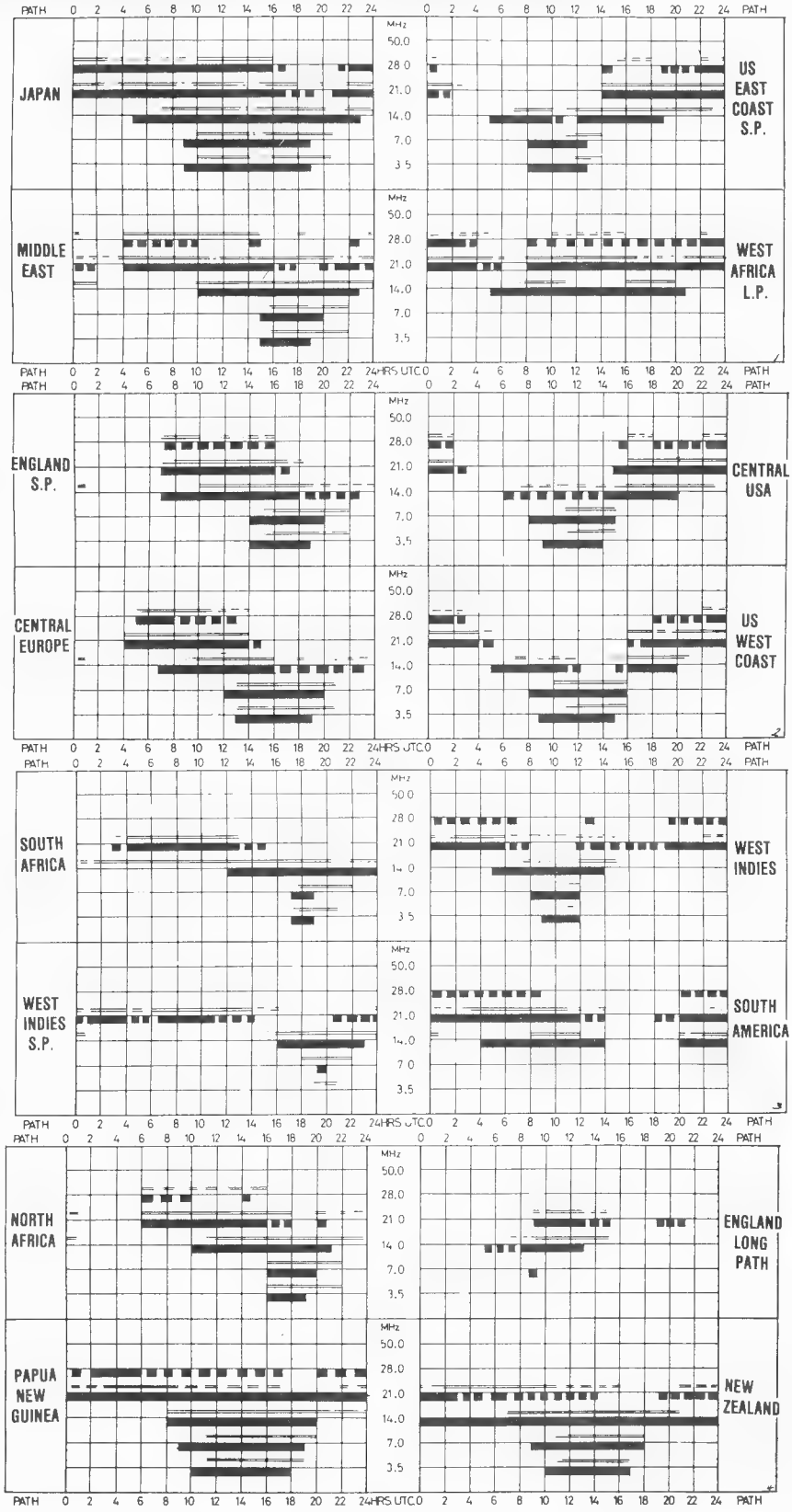
40 METRES

Some really fine DX on this band, but many of the rarer ones working split and listening up out of our segment (and since when have VKs been permitted out of band to tell these stations to listen on their transmit frequency — I feel that's taking DXing too far — I'm sure the authorities will also).

On CW A4X1H, A9XCE, DJ1US/ST3, T2AAE, C3AE, VQ9MM, VU2IR, ZE1DK, 5Z4YV and AH2G were in demand, whilst on phone A35FB, CT2AK, EA6CP, FM7AV, FO0DX, N2BA/H18, JD1ALK, OX3ZN, PJ2CC, PJ9EE, 4S7KK and numerous Europeans were in demand.

IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE



Predictions courtesy Department of Science and Environment IPS Sydney.
All times universal UTC (GMT).

80 METRES

Patchy to say the least, 4S7KK on phone plus weak USA and European — frustrating — you can hear them but the QRM over there is so heavy they don't stand a chance of hearing us — any suggestions on how to build a three element quad for this band . . . ? On CW things were a lot brighter, Europe, including UL7BPE, UH8EAA, plus DL, OK. OH and Y22 were available but band openings were short, irregular and when they occurred the problem of getting through the QRM was always present. KP4KK/DU2, Ws and Pacific Islands were easier to work. Give this band some attention this and the coming two months and you should be rewarded.

My thanks this month to VK2AIR, VK6HD, SWL-VK2-0118, L3-0042 for their valuable contributions — they are much appreciated.

Merry Christmas, drive carefully, and hope to C U next year.

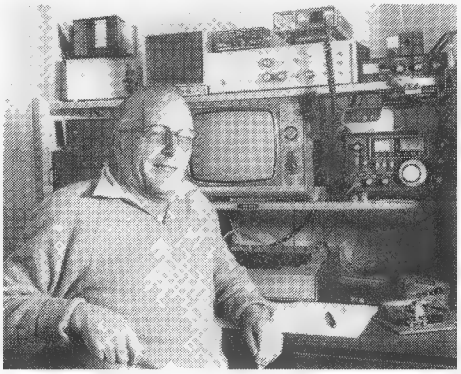
QTHs YOU MAY HAVE MISSED

K2TO/VP9 — via Home Call.
G3AAE/VP9 — via Home Call.
A9XDB — PO Box 26180, Bahrain.
KC6VC — via W7EJ.
KC6ZR.
8Q7AZ and AV — Four Winds, Male, Republic of Maldives.
S79NLB — Box 234, Mahe, Seychelles.
3B8DB — via K5BDX.
SV0AT — via AF4B.
HB9AOX/5N6 — via HB9WU.
CR9B — via WA3HUP.
PV0ZDX — via WA4VDE.
PY0OD — via WA4MDS.
GU5DXT — via DJ5PA.
HK0BKX — via WB4QFH
T3AT — via G3XZF.
FO0DX — via K1MM.
8RIRBF — PO Box 684, Georgetown, Guyana.
W4PYH/KH8 — PO Box 1202, Pago Pago, American Samoa.

Many other QSL routes are available but far too numerous to list. If you need assistance with anything listed I will be pleased to help where possible. ■

CONTESTS

Wally Watkins VK2DEW
Box 1065, Orange 2800



December:

6-11 January	ROSS HULL MEMORIAL CONTEST
6/7	SPANISH PHONE CONTEST
6/7	NATIONAL VHF CONTEST*
6/8	ARRL 160 METRE CONTEST
13/14	SPANISH CW CONTEST
13/14	HUNGARIAN DX CONTEST
13/14	ARRL 10 METRE CONTEST
18	CANADA PHONE AND CW CONTEST

January:

Up to 11	ROSS HULL MEMORIAL CONTEST (VHF)
17/18	2nd ANNUAL INTERNATIONAL 160 METRE PHONE

February:

7/8	JOHN MOYLE MEMORIAL CONTEST
7/8	RSGB 7 MHz PHONE CONTEST

NOTE:

*** National VHF logs to Geelong ARC, Box 520, Geelong 3220.**

TECHNICAL CORRESPONDENCE

14th August, 1980.

The Editor,

Dear Sir,

This began as just a letter intended for technical correspondence, however I feel that it may have turned into something more suitable as an "article".

I wish to make the following comments regarding the article on antenna comparison tests produced by Rodney VK3UG for August AR.

Whilst I would admire his enthusiasm for experimentation and his desire to learn more by practical experience, I do feel that he may have fallen into some traps set for the unwary.

The measurement of antenna patterns is quite a specialised subject and requires, amongst other things, a properly set up antenna measuring range and a proper understanding of the techniques involved.

I will explain further by making specific comments:—

1. ILLUMINATION OF ANTENNA UNDER TEST

(a) This should be done using a directional antenna if at all possible so as to obviate reflections from other objects.

(b) The nature of the intervening ground surface should be constant both as regards its composition (gravel or grass lawn, etc.) and its flatness Perhaps better described as consistency.

(c) Height of the respective antennas is important and should be adjusted to provide a maximum signal produced due to both ground reflected wave and direct wave reinforcing each other. (This is the well known ground reflection technique as used on many antenna ranges.) Distance of the transmitting and receiving antennas apart is also very important, as this governs the heights necessary for the antennas and is a simple matter of geometry, but based on wavelength. It is also important to ensure that the distance is such that measurements are made in the "far field" of the radiation. (Also dependent on frequency.)

2. ISOLATION OF THE ANTENNA UNDER TEST

This is usually achieved by mounting of the antenna at the required height on some form of dielectric support. Materials such as polystyrene foam, fibreglass, wood, etc., are commonly used. This is done to isolate the antenna under test from the influence of the surrounding environment. Another commonly encountered practice is to cover any likely reflecting nearby objects with radar absorbing material (RAM) specifically designed for such purposes and also used without exception for the lining of RF anechoic chambers. Thus the antenna under test can be investigated with a reasonable assurance that measurements will not be clouded or ambiguous due to outside influences. The total surrounding area should be as clear as possible of any other objects.

3. GROUND PLANES

No such thing as a perfect ground plane exists in practice. Theoretically it should be perfectly conducting and infinite. For serious tests either an extremely large sheet of metal, several wavelengths in diameter, should be used or at the very minimum a set of radials numbering no less than, say, 32 should be employed. The radials should be of an absolute minimum length of ¼ wavelength and preferably even longer. The more radials the better. Bending of the radials to produce a "match" for the reference antenna obviates the use of this ground plane for the rest of the measurements. Simply substituting the ⅝ wavelength vertical for the ¼ wave vertical is not satisfactory under these conditions. Improving the impedance match will produce an increased reading at the detector, however the pattern and gain of the antenna will not have changed.

4. TILTING OF ANTENNAS

This approach is totally unsatisfactory. The only acceptable methods would be to move the complete structure of the antenna under test, still on its dielectric supports, through angular increments, each time rotating same on a suitable turntable until a complete picture of the radiation pattern can be built up. With each rotation of the antenna you would have to produce a continuous recording of the amplitude of the received signal, and the number of increments of angular movement you were prepared to carry out would determine the total amount of detail obtained for building up the final picture of the radiation pattern. I can assure you from first hand experience that this can be a most time consuming and at times laborious task with possibly many attendant problems. A strong wind blowing usually means the abandonment of such work. It may be possible to use the antenna under test as a transmitting antenna and determine the radiation pattern by use of a suitably designed probe moved through a 90 degree sector, i.e. from immediately above the antenna down to ground level. This technique does have both physical and technical disadvantages bearing in mind near field effects, ground reflections, the need to keep the probe on an arc of constant distance from the phase centre of the antenna under test, polarisation, etc.

Incidentally, a viewing of the tape of "Dud" Charman's demonstration entitled "Aerial Circus", available through the Federal Videotape Co-ordinator, will make some of these facts come alive before your eyes.

Tilting of the antenna with respect to the ground plane will invalidate the measurements immediately, due to the number of changes which can take place, e.g. impedance changes, the inevitable reflections producing disturbances to patterns, etc.

5 TESTS IN OTHER ENVIRONMENTS

Much of the above would of course indicate that such tests as placing the antenna(s) above the house roof, on top of vehicles, etc., will not provide true indications of patterns produced by any particular antenna design as would be expected from them in a "true space" environment. This is of course often the situation we would like to discover when carrying out our antenna measurements, however you will no doubt note my comment towards the end of this article. Serious work of this nature can only be done using a large and properly set up antenna range which can be most expensive in terms of both real estate and facilities. Such factilities are usually only available at such places as large Government research organisations, well established universities or large commercial concerns specialising in antennas. Another technique adopted is to model antennas to a much higher frequency and carry out tests on them in a specially designed RF anechoic chamber, which again attempts to simulate the condition of an antenna operating in a "free space" environment.

6. GENERAL COMMENTS

The overall height, that is length, of the antenna is not necessarily a factor as the antenna is supposed to perform a function dependent on its particular design, i.e. it is a ¼ wave, ½ wave or ⅝ wave antenna, etc., and thus is resonant in one way or another. In other words the antenna has to perform the necessary function for which it was designed. Matching to such antennas is yet another subject.

Reflections of the transmitted signal play a major part in performance over any given path, and please bear in mind that throughout this article it has been assumed that we are referring in the main to antennas used at VHF, UHF, etc. That is not to say that much of the information contained herein does not apply to antennas for use at HF, and in fact most of what one can say about antennas applies universally irrespective of frequency. However specifically referring to VHF and above, even with apparent line of sight conditions, reinforcing or cancelling effects can occur. I suggest that the textbooks could be consulted regarding "Fresnel" effects. You can pick a site way up on top of a mountain and be able to see the top of another mountain equally as high in the distance. What a really beautiful situation for a VHF contact with a station on top of the other mountain, but do you really know or have you ever considered the effect of the rest of the topography between your beaut mountain top and the other, and what that smaller mountain below you and in between can do to the signals over what would seem to be a perfect path? Don't let me deter you from selecting mountain top sites, especially for VHF Field Day Competitions, but I can assure you that it's not always what it may seem at first glance.

To return to the article referred to previously, Rodney does appear to contradict the basis of his tests described earlier on in his article when he states that an antenna on a vehicle bending back whilst in motion will cause the radiation pattern to alter. This is quite true as explained above, but is also however a most complicated phenomenon and would present a most difficult situation for analysis with vehicles in motion. Aircraft of course travel at much higher speeds than motor vehicles, but if you examine the majority of antennas on aircraft you will see that they are not only built to present a most rigid construction, but they are also aerodynamically designed. I do not think that anybody has really bothered to consider antennas aerodynamically for ground vehicle use and maybe it is not necessary to do so. Some comments from the article in question might indicate that this aspect of things may after all be a matter of concern, but I do agree with Rodney that the judicious use of a length of nylon fishing line can pay off, and I have used it to good effect with HF antennas mounted on my vehicle. If the antenna is still standing up straight and true it may not look to the "boys in blue" that you are going so fast after all. Hi!

Experience would indicate that the occurrence of "mobile flutter" has as a rule very little to do with actual movement of the antenna with respect to the vehicle as it occurs commonly at constant speed situations. This does not excuse poor installations where a bad connection exists in the system. Mobile flutter is most usually due to the rapid changes in the propagation path caused by movement of the vehicle in respect of other reflecting object.

By all means do all you can to suppress electrical and ignition noises from the vehicle in which any radio installation is employed irrespective of the frequency of operation of the radio equipment. Suppression of vehicle electrical systems can also become the subject of much specialisation.

The mounting of any atenna is most important and despite all the sophisticated tests which may be carried out on the best equipped antenna range one is always subject to the environment of the final point of installation of the antenna, be it on a tower, a vehicle or any other objects.

The subject of preventing currents from flowing on the outside of coaxial lines one would also wish to treat separately. Suffice to say I could mention baluns, RF choking systems of many different types, adjustments of skirts on coaxial dipoles, etc., etc. Again a subject which can become quite complicated.

Still another comment, referring back to two paragraphs before this one! The design, matching, pattern measurements and all the other aspects of antennas is a "precise" science based in the end on completely empirical methods! The formula for success with antennas could well be defined as E = SIAS. E — efficiency. SIAS — Suck it and see! If it works for you, use it!

I would not however be prepared to conclude this treatise without stating that I feel that Rodney's contribution is worthwhile both from the aspects previously mentioned and also that such contributions may cause some other interested experimenters to at least stop and think. Despite any of the foregoing, please do not take the attitude that you must have an expensive or unattainable facility available to you to carry out your own useful experiments. And certainly don't just keep the results to yourself! Have them published in "Amateur Radio". You may learn more and also help others to learn more by doing so.

By the way, is anyone else interested in producing yet another article on the subject of "VSWR" and its effects?

Ian J. Hunt VK5QX. ■

HELP WITH INTRUDER WATCHING

AROUND THE TRADE

IFR-2000 TRANSMISSION TEST SET

The IFR Incorporated Company of Wichita, Kansas, through their Australian distributor Vicom International Pty. Limited, of South Melbourne, have released a transmission test set, the IFR-2000. This is a complete ATE system designed to provide complete stimulus/response testing automatically. Measurement of AM, FM and SSB to 1 GHz is all possible from this unit. Standard features include:

1. A digitised spectrum analyser/oscilloscope display with 256 x 1024 resolution with two stored wave forms. Two wave forms (one stored, one real time or two stored) may be displayed simultaneously.
2. 200 kHz to 1 GHz generator coverage
3. 60 kHz to 1 GHz receiver coverage with optional preamp installed.
4. IFR developed "eze test" BASIC interpreter.
5. Dual tone audio generator sine, square and ramp outputs.
6. 16K of static RAM.
7. 1 DC-00A cartridge drive. Optional equipment is a second DC-100A cartridge drive for data and programme storage (1.24 MBYTES total) and IFR bus controller, two channels of D/A and 32 channels A/D conversion and also expandable to 32K of user RAM.

All the functions of the IFR-2000 are under microprocessor control except speaker volume, CRT intensity and focus. The measurement functions include percentage AM, deviation, power to 100 watts, sub-audible AF and RF frequency, as well as frequency error. The receiver features three programmable band widths, plus LSB and USB.

The automatic testing function is suited for production line testing, the testing of radios and communications systems in the field or repair workshops, as well as general programmable automatic telecommunications purposes. The IFR system offers advantages in that customs software packages are available to customers' requirements and general turn-key systems. ■

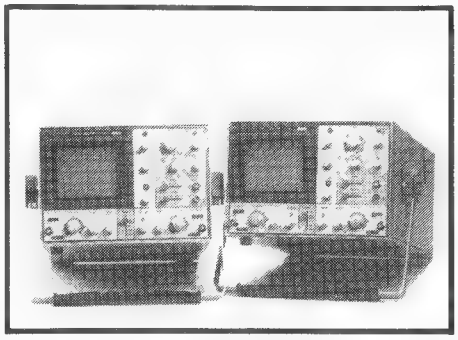
HITACHI PROFESSIONAL SERIES OSCILLOSCOPES 20 AND 35 MHz DUAL TRACE MODELS

Hitachi Denshi Ltd. have released for sale in Australia two new Professional Series Oscilloscopes.

The two new models are the **V202, a 20 MHz dual trace,** and the **V352, a 35 MHz dual trace** model. Both the V202 and the V352 are rated at **+ 3 per cent basic accuracy voltage (vertical)** and **time (horizontal) axis.** The accuracy combined with the **1 mV** per division sensitivity and the fast sweep range **.2uS to 0.2S** in **19** steps will ensure that these CROs have particular appeal to the professional engineer, computer technician and the workshop serviceman.

The new oscilloscopes are attractively packaged with a carry handle that doubles as a tilt stand and protects the face of the CRO and a rectangular CRT with internal graticules developed especially by Hitachi for the new series of oscilloscopes

Standard Components Pty. Ltd., the Australian agents for Hitachi Denshi Oscilloscopes, will sell the **V202** for **$665** and the **V352** for **$1059.** Considering the specifications and quality of both these new oscilloscopes it appears that Hitachi have set their sights on a sizable share of the Australian oscilloscope market. ■



WICEN

R. G. HENDERSON,
Federal WICEN Co-ordinator,

On going back through my old ARs I find it is two years since I produced a review style column for WICEN, so it is time for an update

MISSION

The agreed mission fo rthe Wireless Institute Civil Emergency Networks (WICEN) is to provide a pool of trained licensed operators with equipment, available for deployment to aid communications in an emergency.

TRAINING

An outline WICEN training course was given in the January 1979 AR and details of many of the course topics appear in subsequent issues, as below:

Date time groups and time zone prefixes	Feb. 79
Writing a formal message	Mar. 79
Sending formal messages over radio	Apr. 79
WICEN emergency plans contents	June 79
Records and logs	June 79
Map reading	Aug. 79
WICEN formalities	Aug. 79
Planning a WICEN exercise	Sept. 79
Pro-words for radio use	Oct. 79
Emergency service voice procedure	Dec. 79, Jan. 80, Mar. 80

GENERAL DESCRIPTION

A general description of WICEN was given in the July 1980 AR column.

JOINING WICEN

If you wish to join WICEN and prepare yourself to use your hobby in the aid of others in an emergency, contact your Divisional WICEN Co-ordinator for further details. Their names and addresses are:—

ACT: R. APATHY VK1NAS/ZAI, QTHR.
NSW: H. FREEMAN VK2NL, PO Box 123, St. Leonards NSW.
VIC.: P. MITCHELL VK3ANX, QTHR.
QLD.: K. AYRES VK4KD, QTHR.
SA: A. RAFTERY VK5BW, THR.
WA: S. JENKINS, 12 Fagan Street, Yokine, WA 6060.
TAS : A. BOON VK7AW, QTHR.
NT: T. CONNELL, VK8CO, QTHR.

WICEN HISTORY

It is time a brief history of WICEN was compiled, starting at, say, the late forties when the WIA had a Civil Defence Network. If you can contribute with some notes on the early days of WICEN in your area, I would be pleased to receive them and compile a short history of our activities. ■

WIA

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Employment prospects on successful completion of the course are good since the College offers the only courses available in Australia for Marine Radio Officers, and numbers are geared to projected demand. Further opportunities are likely to exist ashore for experienced, well qualified Radio Officers in the communications field.

Subject to demand, for those who do not meet the above entry requirements, consideration may be given to offering a lower level course leading to a General Certificate—the minimum statutory qualification for a Radio Officer.

For further information and application forms contact:—

The Admissions Officer,
Australian Maritime College,
P.O. Box 986,
Launceston 7250
Tasmania
Telephone: (003) 26 3155

SILENT KEYS

It is with deep regret that we record the passing of —

Mr. W. E. BOVIS	VK7ED
Mr. W. BORNHOEFT	L50540
Mr. E. B. GIDDINGS	VK3ANQ
Mr. A. E. PARKER	VK4ZJS
Mr. D. M. MITCHELL	VK4NYN
Mr. E. J. CRUISE	VK7EJ
Mr. G. L. B. WELLS	VK3TW
Mr. V. R. P. COOK	VK5AC
Canon H. A. STIRTON	VK3VOY

OBITUARIES

HORRIE STIRTON VK3VOY/L31168

The many friends of Canon Horace Albert Stirton (Horrie) who met him on 3.562 MHz at 9 a.m. and 5 45 p.m. daily will mourn the loss of a fine man who overcame very many problems of ill-health and obtained his Novice Certificate in spite of those problems. He was a short wave listener for some years and was encouraged by Gilbert Hughes, DRI Bendigo, to try for his NAOCP and after several bouts of illness which forced him to not only retire from his work in the Church of England but delayed his studies in the field of radio. His greatest moment was when he received his Novice ticket and could talk with those he had heard many times around the airways. Because of his state of health he moved to Phillip Island and when he was not in hospital he found great pleasure in amateur radio, talking to the "boys", most of whom were in excess of 60 years of age, and when he was unable to talk then just to listen to the good natured banter among the geriatric net each morning.

He made his last transmission on Thursday evening, 16th October, entered hospital the next evening and passed on to the meeting place of all old amateurs around 4 a.m. on Saturday, 18th October, 1980. So long Horrie.

VK3DOV, AUV, NNC, NEG, NEP, VRO, VEN, NJM, &c. ■

ROY COOK VK5AC

Roy passed away on 26th August, 1980, at the age of 81, after a short illness. He was a real old-timer, having been associated with station XVN in 1913 and continued active up to, and including, the recent RD contest. He served in Army Signals during World War 1. He was appointed one of the original councillors on the formation of the SA Division of the WIA in November 1919, and was granted his experimental licence in 1921, with the call sign 5AC, which subsequently became A5AC, OA5AC and VK5AC. His employment with the Department of Customs and Excise provided opportunities for personal contact with ships' radio officers who co-operated with him in ship-to-shore contacts and also helped in importing radio components from overseas.

In 1924 he was providing Morse Practise Broadcasts on 200 metres and one of his early transmitters is preserved in the South Australian Telecommunications Museum.

More recently, he had been operating an FT220 and, although confined to a wheelchair, still managed to keep in touch with his many friends. He will be sadly missed.

Gerry Preston VK5P. ■

ERIC BOYNTON GIDDINGS VK3ANQ

We were all saddened to hear of the passing of Eric VK3ANQ on the 31st August, 1980, at the Warrnambool Base Hospital. Eric Boynton Giddings was born on the 29th March, 1908, at Hamilton, Victoria. He then, with his parents, moved to Warrnambool, where he met and married Beryl Reeves on the 13th January, 1934, at Warrnambool. They had three children, in order, Judy, Ross and Ralph.

Eric took an early interest in radio and from the early 20s as a SWL logged and QSL-ed many early amateur operators throughout the world. He obtained his AOCP certificate on the 22nd May, 1953, and made the first contact as VK3ANQ with VK3EQ on 144.00 on the 26th May, 1953.

A dedicated VHF operator, Eric helped many a 2m amateur by providing regular contacts from his home built AM station. In the last few months of his life he obtained a SSB transceiver, renewing contact with many of his friends and making new ones.

His involvement with amateur operators and SWLs is shown by his willingness to work and take office through the various local amateur organizations. From 10-4-54 to 30-4-55 he was Secretary for the South-Western Zone and in 1966 was elected President of the zone, supported by his XYL Beryl, who for many years was appointed auditor for the South-Western Zone. He was also an active member of the Old-Timers' Club, supplying news for the Western Zone Newsletter. In February, 1975, Eric was one of the foundation members of the Warrnambool Amateur Radio Club, serving as Vice-President from May 1976 and was elected President in May 1977. A dedicated member of the WARC, he was always first to the club rooms to open up and prepare for the meetings; he was also the last to leave.

Eric is survived by his XYL Beryl, his daughter Judy (XYL 3FX), his sons Ross and Ralph. The respect of the local amateurs for Eric was evident at his funeral at Warrnambool on the 3rd September, 1980, when 27 local amateurs attended. Friend and fellow amateur Ces VK3YW conducted the service at Christ Church and the Warrnambool cemetery.

May I as a long time friend with all other amateurs who knew Eric personally and through amateur radio operating, express our deepest sympathy to his wife Beryl and family for the loss of their husband and father.

John VK3TN. ■

ALARA

AUSTRALIAN LADIES' AMATEUR RADIO ASSOCIATION

The October meeting of ALARA was at the home of Mavis VK3KS. Nine members were present. The new constitution was discussed and a draft drawn up. This will be published in the next newsletter for comment, before being finalised. The next meeting will be held on November 15th. It was decided to postpone the annual meeting until next year.

Discussions on the ALARA award were deferred and these will be reviewed shortly. Some teething problems are being experienced but hopefully Mavis VK3KS, the new Awards Manager, will be able to cope with these.

Membership of ALARA continues to increase and we welcome new members. Enquiries to the Secretary, PO Box 110, Blackburn 3130.

Girls, remember the ALARA sked is on Monday night, 3565 ± QRM, at 2030 EAST. Geraldine VK2NQI, net controller, will be pleased to welcome new girls. YLs only until 2130 EAST, then others can join in for points to ALARA awards.

YL Activity Day on the sixth day of each month is gaining popularity! Frequencies to look for on the hour Z are **14.288, 21.188, 21.388, 28.588** and **28.688.** Call CQ YL and find someone new to chat with.

In October an ALARA member, Elizabeth YB0ADT, and OM Reg were visiting Australia; while in Melbourne some of the girls met Elizabeth. She was presented with her ALARA award by Mavis VK3KS. Also a memento — an ALARA teaspoon, was presented.

Elizabeth and Reg were stationed in Jakarta for the past two years. While there Elizabeth was very active on SSB and also CW. Her radio life began in Norway when, on leaving school, she got a second class licence. For four years she worked as SPARKS in the Norwegian Merchant Navy. Elizabeth met Reg, a Canadian, and they have been married 25 years. Calls Elizabeth have held have been EP2EA, VE7BIP and YB0ADT. Also the call of VK6AYL/M while in Australia. After a trip to New Zealand they are returning to Canada to settle down to lots of amateur radio.

Congratulations to all the girls who have passed exams this year and do hope we hear you on the nets before too long.

To those who are still studying every good wish for the exam when you do sit and hope the results are successful for you all.

Would like to wish everybody a very merry Christmas and a happy and prosperous New Year, with plenty of DX.

Cheers and 73. Margaret VK3DML. ■

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and

Prosperous New Year

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- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTHR means address is correct as set out in the WIA 1979 Call Book.

FOR SALE

TS700S 2m All Mode Txcvr., digital readout, built-in VOX, etc., with mic., $550; also FT301, FV301, FP301 HF Txcvr., ext. VFO and power supply, 200W, incl. mic., $1100 for all three units. Offers considered. S. Greening VK2ADP, QTHR. Ph. (02) 398 2951 AH.

TS520S with CW filter fitted and VFO 520 ex VFO, in as new cond., with operator's and workshop manuals, $700. VK3PR, QTHR. Ph. (056) 62 2711.

Yaesu FLDX 200 Linear Amplifier, very good cond., $250; brand new 6KD6 tubes available at good price. M. Evered VK3AVO, QTHR. Ph. (03) 544 4109.

Swan 350 Txcvr. with AC power supply, VOX, CW, break-in unit, mic., very good cond., $300. VK2ML. Ph. (02) 50 7239.

Kenwood MC 50 Desk Microphone, in box, bought new, never used, $40. Bill L20121, QTHR. Ph. (02) 477 2717.

Nikon: FM camera, immac. cond., compact, with 50 mm f/1.8 lens and case, $350; 100 mm f/2.8 series "E" lens, with hood, $110; 35 mm f/2.5 series "E" lens with hood, $100; SB-9 auto-flash, compact, with case, $50; FB-16 compartment case (suit above equip.), $40. Contact J. Bush L20142, PO Box 124, Dulwich Hill, NSW 2203.

FL2000B Linear Amplifier, 1.2 kW, 572B x 2, $350; Barlow Wardley XCR30 Rx, $200; FT101B DC supply fan, new driver and finals, $550; FT7, brand new, $400; FL110 linear amp., 160-10m, brand new, $200; FT200 AC supply and DC acitron mobile supply, $350; R210 comm. Rx, 2-16 MHz, AC supply and speaker, CW filter, $80; HB 20m linear amp., 813X2, 6.6 HD power supply (spares), 2 kW, $200; 813 x 2 6.6 HD power supply (spares), 2 kW, $200; HB 20m linear amp., 4/1000A, AB2 GC, 4 kW, self-contained unit, HDV power supply, 6 kV, spare tube, commercial app., $800, or swap for TL922 linear. Laurie VK3AW, QTHR. Ph. (03) 376 1429.

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Collins S-line 75S-3 Rx, NB, notch, CW filter, $600; 32S-3 Tx, $600; transceive/split operation; Datong ASP push-button speech processor, $200; Collins power supply, $200; 500 kVA 100V transformer, $100. George VK1GB, QTHR. Ph. (062) 47 3296 or 54 1985.

UHF FM Carphones, Willis U10 autophones, compact solid state units that cover the 70 cm band with no modifications, circuit diagram and tune-up info included, $100; Yaesu FT DX 100 Txcvr., good cond., $300, ONO. VK3CCM, QTHR. Ph. (051) 44 3485 AH.

Shack Clearance, reasonable offers accepted: FRDX-400 and FLDX-400 Txcvr., $365; C42 6m FM Txcvr., with AC PSU, $60; B47 6m FM Txcvr., with AC PSU, $50; Lafayette KT-100 gen. coverage Rx, $100; Realistic DX-160 gen. coverage Rx, $120; Eddystone 750 gen. coverage Rx, $160; Eddystone 770R VHF Rx, 19-165 MHz, $250; model 15 TTY, $40; 850 Hz TTY TU, $50. VK3ZUX, QTHR. Ph. 615 3641 Bus., (03) 781-2797 AH.

Trio TS510, power supply and VFO, 10m does not work, all other bands OK, $195. Bob VK3GQ. Ph. (03) 306 8336.

Vertical Antenna, Butternut, 80 through 10m, HF5V3 trapless 26 ft. high, low VSWR on all bands, 1.2 to 1, suit person with limited space, e. cond., $120, ONO; 3 el. quad, duo band, 10-15m, home-brew, sturdy aluminium construction with hollow fibreglass spreaders, light and robust, low VSWR on both 10-15m ,gamma matched, very good FB ratio over 20 dB, also two balanced feedlines approx. 25m RG58 for both 10-15m, boom length 11 ft. with boom to mast clamps, $220, ONO; converted CB, 10m, Airhawk/Contact as per ARA Vol. 2, covers 27.945 to 29.010 MHz, 12W PEP with 5 kC steps, slight problem with transmit, $120, ONO; Fujica 35 mm camera, model ST107, in exc. con., robust, cost $240, sell $140. VK3VDI, QTHR. Ph. (03) 314 2027 6-9 p.m.

Dentron Super Tuner, 160m through 10m, will accept all feed lines, $110; Electronic Australia magazines, may 1971 to June 1980, five copies missing, $30 the lot. VK2DET, Corrimal. Ph. (042) 84 3400.

Yaesu-Musen FL-2100B Linear Amplifier, near new, $400. John Tilley VK1FT, QTHR. Ph. (062) 80 6481 Bus., (062) 86 2364 AH.

Yaesu FRG-7 Rx, exc. cond., .5-30 MHz general coverage, $270; liner S878P PLL CB, suit conversion to 10m, $80. Mark VK3PI. Ph. (03) 478 8726.

SHUTE HARBOUR

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SHUTE HARBOUR, Q. 4800
PHONE (079) 46 9131
DAVID McINERNEY

Icom Model 502 6m SSB Txcvr., 52-53 MHz, good cond., $130, ONO. VK5ZGH. Ph. (08) 270 3452.

Collins 618S HF Txcvr, shockmount 350 S-1 or 3, power supply 416W-1, shockmount 350T-1, antenna tuner 180L-2 or 3, shockmount 350D-3. VK3BFB, QTHR. Ph. (03) 93 1638.

QM 70 High Power 28/144 Transverter, 2 ranges 144-146 and for satellites 145-7-147.7 MHz, separate Rx and Tx inlets, all modes, $120; matching 240V power supply, selectable HT 600 and 900V, $70, or will swap and pay difference for a dual beam CRO, 1 mV/cm, DC to 12 MHz or higher. J. Aust VK4ABJ, PO Box 247, North Rockhampton, Q. 4701. Ph. (079) 28 1105.

HyGain TH3 Mk. 3 Antenna, 10-15-20m, 14 ft. boom, 3 element, $225; rotator 502 CXX, heavy duty, 240V, $240; mast clamp for 502 CXX, $30; all new, original packaging; or as one lot, $480. Alan L30845, QTHR. Ph. (03) 89 6408.

Drake SPR4 Rx 160-10 with noise blanker, solid state, good working order, $280, ONO; crystal 10 MHz, suit 2 MHz IFRI-Z-6 Rx, simplex S40-49-51, $5. VK3YNB, QTHR.

Kenwood TS520S, CW filter fitted, $580 firm; as new, original packing. VK3ACA, QTHR. Ph. (03) 578 2058.

Army No. 11 4 2-7.2 MHz Txcvr, in working cond. with meter, mic., phones and all plugs; Army No. 11 power supply unit, genemotor, etc., to suit above; aerial coupling unit for Army No. 11; wireless set No. 208 Mk. II 2.4-3.6 MHz Txcvr, in working cond., complete; Pioneer dynamotor, 12-18V in, 450V out. Best offers. VK2FD, QTHR. Ph. (063) 68 7235.

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Tuno 7000E Communications Computer, exc. cond., send and receive CW, RTTY and ASCII, split screen and variable speeds in sending mode. $790. Steve VK3VNI. Ph. (059) 71 2843.

Siemens 100 Teleprinter, $300 (no keyboard); 6m amplifier, 25 watts, AM-4306/GRC, $25; Tram XL5, modified 10m, plus 2 antennae, $150. Roger VK2DNX (ex VK2ZWY). Ph. (02) 546 1927.

ALBANY

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Kenwood TS520, DG5 readout, BS5, SP520 speaker, $600; IC212 (215) nicads, 10 channels, $250; Drake MN4 ATU, $100; good cond. John VK2WW, QTHR. Ph. (02) 546 1927.

KW "Viceroy" Mk. III Tx, 180W PEP, $150; KW "Vespa" Tx, 90W PEP, $75; Trio 9R 59DS comm. Rx, $75; all in good order and complete. Write VK4NUY, 14 Cooradilla Street, Jindalee 4074.

SWLs: Australia's national "Southern Cross DX Club" has the latest from the everchanging world of international shortwave, medium wave and amateur bands, in our monthly publications "DX Post". For a sample copy of "DX Post" and details of subscription, send a 28c stamp to the Membership Secretary, Grantley Williams, 19 Wicklow Avenue, Athelstone, South Australia 5076.

FT-227R Memorizer, 800 ch., exc. cond., complete with mic., manual, mobile mount and hardware, sell for $220. Contact John Brereton VK5NHB, QTHR.

Heathkit SB-301 Rx, AM, SSB, CW, RTTY, with 3 filters, SB-600 speaker, SB-540 frequency display, all in exc. cond., as new, with service manuals, $750 the lot. Write to G. Himolij, 118 Wilson Road, Newcomb, Geelong, Vic. 3219.

Leader LSG-11 RF Signal Generator, perfect cond., $55. Roy Hartkopf VK3AOH, QTHR.

Europa B Transverter, 144-148m, perfect cond., complete, $190. J. Lee, MS 30, Chinchilla, Q. 4413. Ph. (074) 65 8183.

WANTED

Tower, 50, 60, 70 or 80 ft., preferable sections, with guide wires; also CB radio, preferable Uniden type (President, Ferris), at reasonable price. Danny VK2VCV. Ph. (02) 588 4414.

DG5 Digital Readout for TS520S. VK1RH, QTHR. Ph. (062) 58 7904.

240V-110V Transformed for model 15 teletypewriter with synchronous motor, must be rated at 4A; also require any details of G5RV aerial. Terry Robinson L31105, QTHR. Ph. (054) 27 1574.

Teleprinter Mod. 15 or similar. J. Lee, MS 30, Chinchilla, Q. 4413. Ph. (074) 65 8183.

Cooling Fan for FT101. VK6NPW, 23 Wadell Road, Palmyra, West Australia 6157.

Swan MB80A or MB80 Monobander Txvr. Details to VK3CCE, QTHR. Ph. (03) 509 1667.

Filter for Hepburn Building Blocks, 10.7 or 9 MHz, reasonable offer, Hy-Q, Pye, KVG, etc. John VK3VGP, 1 Cambridge Street, Seaholme, Vic. 3018.

Tektroniv Plug-in, type L or IAI ETL, manual, information on varian rubidium frequency standard type V4700. VK2ARD, QTHR. Ph. (064) 82 2183.

HyGain 143VQ (not 14AVQ/WB) measurements. Mal Sinclair VK2BMS, 52 Fourth Avenue, East Willoughby, NSW 2068. Ph. (02) 407 0261 Bus., (02) 95 2362 AH.

TRADE HAMAD

Amidon Cores — Iron-powder and ferrite, enlarged range available for tuned/wideband and supression applications in Rcvrs /Trans., large SASE for data/price list. Closed for business during November. RJ & US Imports, Box 157, Mortdale, NSW 2223.

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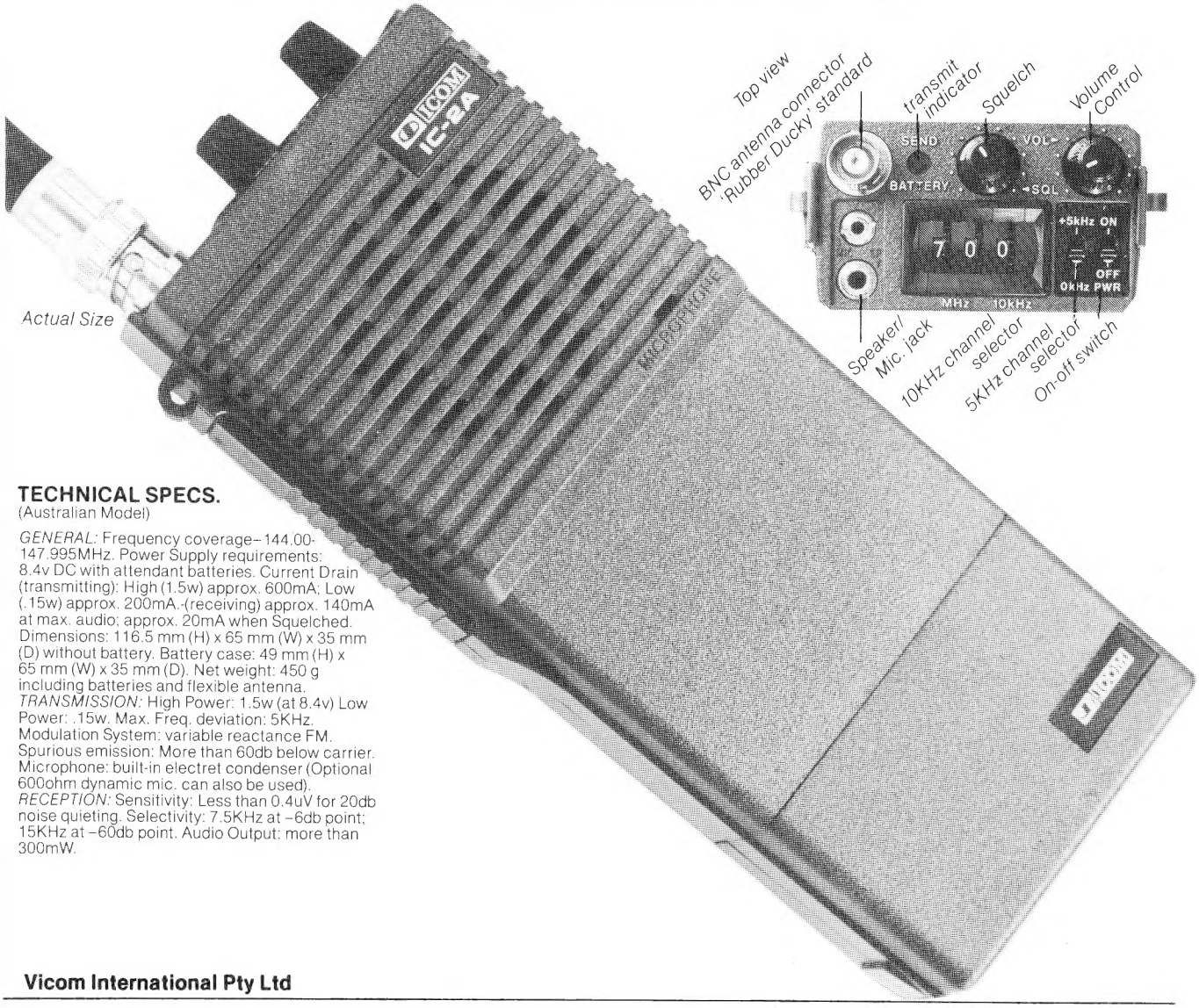

TECHNICAL SPECS.
(Australian Model)

GENERAL: Frequency coverage–144.00-147.995MHz. Power Supply requirements: 8.4v DC with attendant batteries. Current Drain (transmitting): High (1.5w) approx. 600mA; Low (.15w) approx. 200mA.-(receiving) approx. 140mA at max. audio; approx. 20mA when Squelched. Dimensions: 116.5 mm (H) x 65 mm (W) x 35 mm (D) without battery. Battery case: 49 mm (H) x 65 mm (W) x 35 mm (D). Net weight: 450 g including batteries and flexible antenna.
TRANSMISSION: High Power: 1.5w (at 8.4v) Low Power: .15w. Max. Freq. deviation: 5KHz. Modulation System: variable reactance FM. Spurious emission: More than 60db below carrier. Microphone: built-in electret condenser (Optional 600ohm dynamic mic. can also be used).
RECEPTION: Sensitivity: Less than 0.4uV for 20db noise quieting. Selectivity: 7.5KHz at –6db point; 15KHz at –60db point. Audio Output: more than 300mW.

Vicom International Pty Ltd

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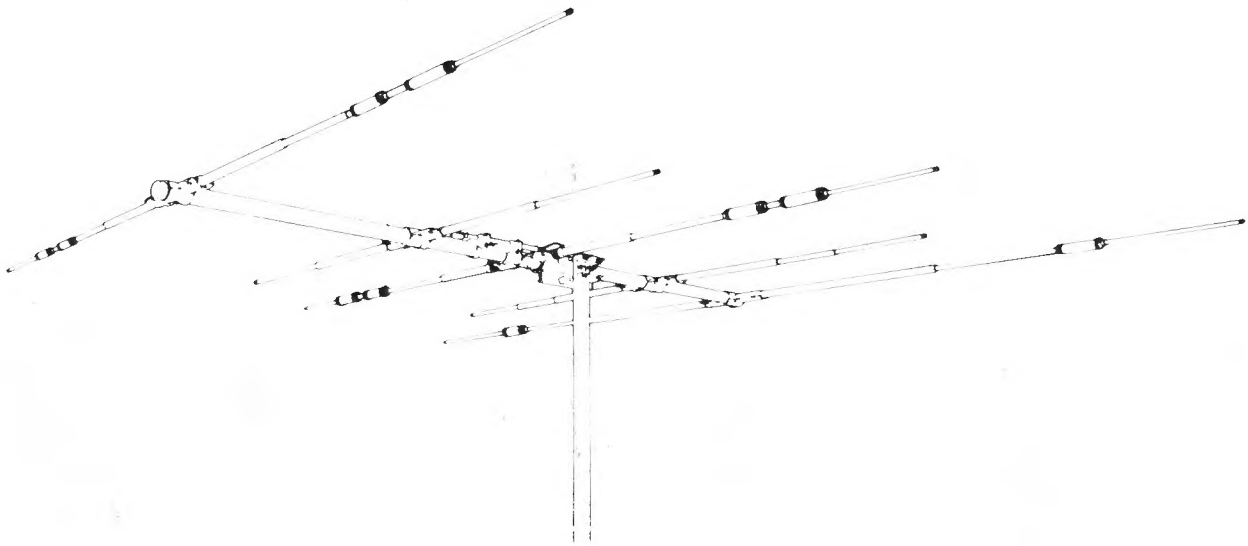
TH5DX

10-15-20 METERS



We are proud to introduce the newest member of our famous Thunderbird line of Tri-Band antennas. The TH5DX offers outstanding performance on 20, 15 and 10 meters. It features 5 elements on an 18 foot boom, with 3 active elements on 15 and 20 meters and 4 active elements on 10 meters. The TH5DX also features separate air-dielectric Hy-Q traps for each band. This allows the TH5DX to be set for the maximum F/B ratio and the minimum beam width possible for a Tri-Band antenna of this size. Also standard on this antenna are Hy-Gain's unique Beta-match, rugged Boom-to-mast bracket, taper-swaged elements and improved element compression clamps.

Boom length	18 feet
Longest Element	31 feet
Turning Radius	18 feet
Surface Area	6.4 sq. feet
Wind load	164 lbs
Weight	50 lbs
VSWR at resonance	less than 1.5:1
Power Input	Maximum Legal
Input Impedance	50 ohms
−3dB Beamwidth	66° average
Lightning Protection	DC ground
Forward Gain	8.5dB
Front-to-Back Ratio	25 dB

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